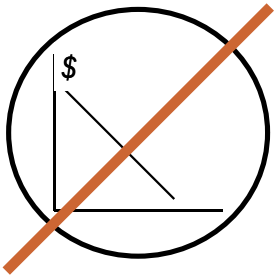
AMQ International

Strategic Asset Management

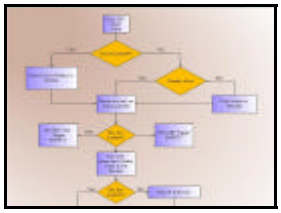
Issue 203 October 30, 2006



Fund Renewal, Not Depreciation

Part 2: HOW

Benefits of "invisible" assets p.170



'How to' Fundamentals pp 171-172

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You know you are on the right track when, pp 174-176

In principle if you are able to fund each renewal activity as it falls due without curtailing other services then you are financially sustainable. But how do you know?

You may be able to fund renewal due in the next two or three years but what is waiting around the corner?

Or you may wish to defer renewal because of funding limitations but if you push the renewal period out will you be any more capable of funding it when it falls due next time?

These are pretty basic questions and agencies have to cope with them all the time. The task is impossible without a well-developed asset management plan that projects requirements *at least* ten years out. And the longer lasting your assets and therefore the greater the potential peakiness of renewal, the longer you need to look out to ensure that when the time comes you will be ready.

In this issue we look at some practical work being done in South Australia by the SA LGA with the IPWEA for local governments. We also look at an example of funding asset renewal in the Santa Margarita Water District in Orange County, California, that illustrates the fundamentals.

Over the years I have found that when you are on the right track, the approach you are using solves not only your current problem but also many others besides. When you are on the wrong track, the approach solves one problem but only at the expense of creating many others. This is clearly so with 'funding renewal not depreciation' – see "You know you are on the right track"

Enjoy! *Penny Burns*

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THE BENEFITS OF "INVISIBLE" ASSETS:
or why utility asset managers have it easy!

Key Ideas:

- Assets that are invisible to the user—pipes, wires, utility assets in general
- Assets that are very visible to the user and impact the users' perception of service quality—roads, building assets where the buildings are used by the community, eg schools, hospitals.
- These assets need to be managed differently

I cut my asset management teeth on water and wastewater assets and I knew instinctively that had I not worked out the system for forecasting the cost and timing of asset renewal on water assets first, I would never have managed health, housing, education and roads. However, it was not until now that I understand why. Reading Ken Harlow's paper on asset sustainability in the Santa Margarita Water District (excerpts opposite) I realised that local councils that manage roads, and agencies that manage property assets have a much tougher job because their assets are visible.

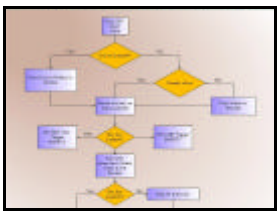
With utilities, assets are effectively invisible to the end user. The pipe may be rusted out and leaking bucketfuls but the user doesn't see it. The transformer station may be held together with the proverbial wire and bandaids, but, again, the user doesn't see it. The only thing that the user is interested in is performance: does the water flow freely from the tap, does the wastewater disappear when the button is pushed? Price is important, too. But not the assets as such! The only one really interested in the assets is the asset manager. (Utilities also have other enviable attributes as well - namely a measure of performance in the bottom line that can be used to justify expenditure. And because of this, utility asset management units tend to be rather better resourced than others, say, in local government.)

This is not so for property assets, or roads. Here the asset is part of the service experienced by the end user. If he drives on a pot-holed road, even if the pot-holes are not on the section of the road he is using, the perception is of a lower grade of service. If she goes to hospital and has to wait in a barren, scruffy room, her perception of the hospital service is poor, even if the medical services themselves are excellent. If they take their children to a school where the buildings are in poor repair, they will not fully appreciate the quality of the teaching service that is provided. In all of these areas, the quality and appearance of the assets is an important determinant of the perception of service quality. These assets are not invisible.

This is why the quality of roads and buildings are a political issue, whereas the quality of pipes and wires rarely is (except when they catastrophically break down, eg Auckland CBD blackout, Longford Gas explosion, Sydney water quality scare.) With roads and buildings we don't have to wait until performance deteriorates for their condition to be important to users.

Issues of aesthetics, politics, and consumer confidence all have to be weighed in the balance when considering the quality of road and building assets; utilities are largely free from this. There are two corollaries to this: (1) economic lives will generally be shorter, and (2) if a change in asset condition is to be managed, even if it does not affect what we might see as service performance, it will still need to be approved in community consultation.

There is a third corollary: the standard manual on asset management, the IIMM, was based on the work and knowledge of people heavily steeped in water assets. While its principles apply, it needs to recognise the problems for non-utility asset managers that are caused by the higher visibility of their assets.



Key Ideas

4 Key Concepts
- Useful life
- Asset class look up tables
- Where individual asset lives are not know they can be estimated based on class information
- Renewal is cyclical

Means that

If you know
- Age,
- Economic Life, and
- Replacement Cost

You can forecast renewal

Ken Harlow has been using a renewal funding approach with the Santa Margarita Water District in Orange County and sent me a paper on this work. A small except on the concepts is given below but you can find the whole paper "Sustaining the infrastructure by understanding replacement needs" and many other papers of great interest at www.bcwaternews.com/AssetMgt/

The Conceptual Approach

The approach taken by the District rested on several key concepts:

1. Every asset has an expected useful life, a replacement cost, and possibly capital refurbishment requirements between replacements.
2. Every asset belongs to an "asset class" whose members are intuitively similar, have similar expected useful lives and refurbishment requirements, and can be costed from a formula or look-up table based on one or two key attributes (horsepower, capacity, length, depth, etc.)
3. Where the useful life, replacement cost, or refurbishment requirements for a specific asset are not known, these can be calculated based on information pertaining to the asset class.
4. Replacements and refurbishments are cyclical, that is, they recur continuously over time until the asset is retired or replaced by a very different asset.

As an example, perhaps a utility has several steel reservoir tanks of various capacities. Each tank can be priced from a table like this one:

Asset Class	From (MG)	To (MG)	Cost/ Gallon
Steel tank	0	0.99	$0.64
	1	2.99	$0.58
	3	10	$0.53

Figure 1 : Typical cost/gallon, steel

If a particular tank has a capacity of 2MG, it can be priced from this table at $1,160,000. Further, if it is believed that this type of tank has a typical useful life of 60 years, This cost can be expected to be incurred at 60 years after construction and every 60 years thereafter (taking inflation into account, of course).

However, this type of tank also requires periodic capital refurbishments during its useful life. These, too, are cyclical. If the cost of each refurbishment is expressed as a percentage of replacement cost, the costs of these refurbishments can be easily calculated for tanks of any size. Here is a typical ownership cost pattern for a steel tank including refurbishments:

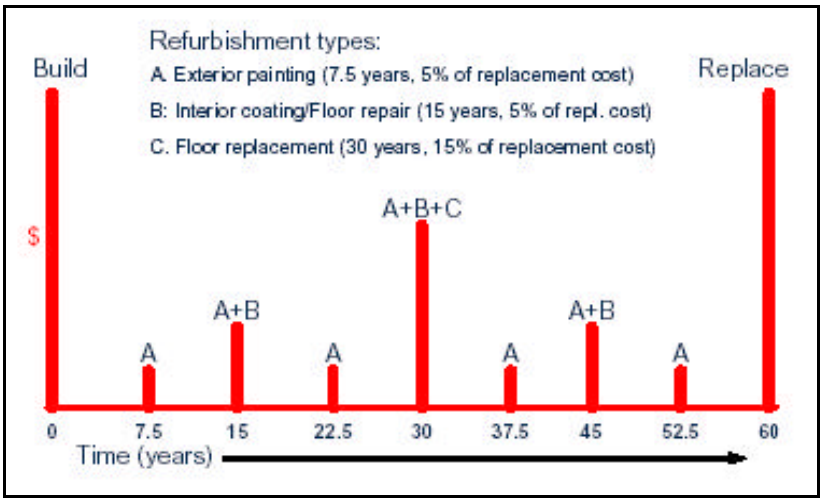


Figure 2: Typical ownership cost pattern, steel tanks

	Build/Replace 60-year cycle	Refurb "A" 5% of repl. cost 7.5-year cycle	Refurb "B" 5% of repl. cost 15-year cycle	Refurb "C" 15% of repl. cost 30-year cycle	Total cost ($000s)
1960	$1,160				$1,160
1967		$58			$58
1975		$58	$58		$116
1982		$58			$58
1990		$58	$58	$174	$290
1997		$58			$58
2005		$58	$58		$116
2012		$58			$58
2020	$1,160				$1,160
2027		$58			$58
2035		$58	$58		$116
2042		$58			$58
2050		$58	$58	$174	$290

Figure 3: Expected capital ownership costs, 2MG steel tank built in 1960 ($000s, unescalated)

Now the capital ownership costs for any of the steel tanks can be easily calculated, knowing only the installation year and the capacity.

In figure 3, for example, are the costs expected during the first 90 years of ownership of the 2MG steel tank, which was built in 1960.

As can be seen, using only the information on what assets are held and knowing only the capacities and years of construction, future capital ownership costs for all of the steel tanks can be estimate over as long a period as desired.

This concept is easily extensible to all of infrastructure assets, most of which will be simpler because no refurbishments are involved.

Two additional concepts entered into the calculation of replacement years of assets:

1. For actuarial reasons, an asset that may have had a 50-year expected life when put in service will have a longer total expected life when it has been in place for some time. The RPM uses curves developed in New Zealand for this purpose. This avoids being overly conservative when evaluating older assets.
2. It is easy to see that (for instance) not all eight-inch vitrified clay pipe installed in 1950 will fail in the same year. In fact, some will fail sooner, some later. The RPM uses distributed failure curves to distribute pipe failures around the expected year of failure. This avoids large and unrealistic “spikes” of replacement needs that might otherwise be indicated.

Finally, once all R&R needs and their costs are known for the period of the forecast, the RPM allows modeling of an R&R Fund against those needs. The aim is to find a combination of funding sources and their patterns of use (discussed further on) that meet both economic and political realities, while also meeting the needs of the infrastructure involved.

OFF AND RUNNING—
The LGA in South Australia move on financial sustainability

Key Ideas

Fill-in templates and guidelines consistent with the IIMM and national risk standards

Prepared for the LGA by the IPWEA

Reflecting sustainability requirements in the new Local Government Amendment Act 2005

Pilot Testing

Early Starters Program

On Site Testing

Training and mentoring.

Councils are long term financially sustainable only to the extent that they can fund *required* renewal as it falls due without *unplanned* curtailing of other services.

The words in italics are important for not all assets may need to be renewed, or if renewed, this may not necessarily be to current service levels as needs change over time. Further, planned changes to services are one of the major tools for managing a potential funding gap.

It follows that if financial sustainability is to be taken seriously then *any gap* between the ten-year funding plan and the first ten years of the IAMP *must* be addressed. It cannot be ignored.

Evidence from the sustainability reports suggests that, in the past, funding gaps have been allowed to grow, partly from lack of understanding and partly through lack of information.

The LGA in South Australia have taken the lead in ensuring councils have both the information and the understanding

The LGA in South Australia was the first to carry out an investigation into the long-term financial sustainability of local government. It has now incorporated the recommendations into Local Government (Financial Management and Rating) Amendment Act 2005. Under this Amendment Act, councils must develop and adopt

- A long term financial plan for a period of at least ten years; and
- An infrastructure and asset management plan, relating to the management and development of infrastructure and major assets by the council for a period of at least ten years.

These plans will form part of the council's strategic management plans which must be reviewed as soon as practicable after adopting the council's annual business plans for a particular year. In any event, councils should undertake a comprehensive review of its strategic management plans *within 2 years after each general election of council.* The next council elections are November 2006.

Working with the IPWEA, the LGA in South Australia has developed a set of templates and guidance notes to enable councils to get their plans in place. The templates and guidelines provided have been designed to provide information to

(a) To determine whether there is a gap between the planned renewal and planned renewal funding of council, and if so

(b) To provide the information and processes to determine how the gap may be closed, through
    a. Increased rates (using information on service levels and costs and risk consequences for community consultation discussions)
    b. Borrowing (knowing when it is safe to borrow – see p 176)
    c. Other (including grants, levies, charges)
    d. Reduced spending (using information on service levels, costs and risks as above)

The templates and guidelines

- Are based on the accepted industry standards, the IIMM for infrastructure and asset management planning and the Australian and New Zealand risk standards for templates and guidelines on risk.
- Require all decisions are made by the asset management team in discussion and enable the capture of expert field knowledge in a systematic way with system wide coverage of all assets. (The pilot studies are starting with roads)
- Provide a consistent approach over all councils while enabling individual council differences and objectives to be fully addressed.
- Incorporate leading practice in performance measurement, condition assessment and life estimation

Early Starters Program

While the full implementation will have to wait upon the New Year for rollout, already councils are champing at the bit to get involved and get their records straight. The LGA has made .pdf draft copies of the templates available to councils for comment and pilot testing and are setting up an "Early Starters" program aimed at those councils who wish to commence development of infrastructure and asset plans prior to the main program rollout.

The "Early Starters" program will comprise the following:

- Completion of the Sustainable Service Delivery Capability Gap Analysis Template, and
- Completion of selected sections of the Infrastructure Asset Management Plan, Infrastructure Risk Management Remaining/ Useful Life Assessment Templates; and

Participants will be requested to work through each template to:

- Assess suitability for their use;
- Identify any terminology needing clarification;
- Comment on the suitability of instructions and guidelines;
- Identify areas for improvement;
- Develop values for assets acquired and constructed for the Council using Growth Data Template
- Document examples of 'suitable level of service' measures for each asset category for their Council being
    1. quality, function and safety for community levels of service;
    2. associated technical level of service measures;
- Document available data on legislation applicable to the Infrastructure Asset Management Plan for each asset class and
- Develop risk evaluation criteria for the Infrastructure Risk Management Plan for each asset category.

One Day Workshop

Early Starter Participants will contribute to a one day workshop to exchange information and provide feedback.

On-site Pilot Testing

On-site pilot testing is proposed at three selected councils to test the Asset Renewal data templates, availability of asset register data and to identify any data reformatting required to suit the renewal model.

Bill Furse (bill.furse@lga.sa.gov.au) is the contact person for the program.

YOU KNOW YOU ARE ON THE RIGHT TRACK, WHEN..

Over the years experience has taught me that

You know you are on the right track when your solution *in practice* solves not only the immediate problem but many others as well.

The converse is also true, when the solution you have chosen is ok in principle, but creates many problems in practice - think again!

Funding Renewal rather than Depreciation is a good illustration of this rule.

Consider renewing a boiler within a hospital. When it was originally installed it would have been easy to lift in for the building was then in construction. Now the old boiler has to be removed and a new one installed—all while keeping the service of the hospital running! A very different exercise and one that cannot be funded with an amount equivalent to installing a boiler in a new hospital. Yet with 'green fields' valuation and depreciation, that is all that is available.

Or consider replacing a sewer in a major highway. When originally constructed it would have been a straightforward task of digging a trench in green field conditions. Now traffic has to be re-routed, the highway dug up and replaced, and the sewer renewed. What is more, the trench is probably now located next to other utilities which require care if they are not to be damaged. A very much bigger job, and more labour-intensive than the original.

But it can work the other way. If pipe liners can be used the existing conduit can be used and the cost can be less than the original.

Over time environmental and social standards change. In order to provide the same service, different activities need to be undertaken at the time of renewal.

The point is that renewal is always Brownfields in nature —by definition! Funding renewal rather than depreciation allows these variations to be catered for.

Valuation and Depreciation can be carried out according to Accounting requirements without distorting the funding requirements of maintaining service.

Key Ideas

Funding renewal rather than depreciation overcomes the

- Greenfields / Brownfields valuation / depreciation dilemma
- Renewing to current standards problem

Informs the Borrowing Decision

- Knowing when to borrow and when not to
- Using borrowing as a device for managing the renewal fund

When to borrow

Borrowing to increase available renewal funds

Borrowing is not a funding source as such, rather it is a mechanism for deferring increases in funding by other methods, such as rates, charges or grants.

Eventually it must be paid back. And when it is, there will need to be an increase in these other funding sources—or a decline in required expenditures to make this possible.

If payback occurs when other demands on the system are low, then borrowing works well to smooth expenditure peaks. However, if this is not the case then payback can exacerbate the peakiness of expenditures.

The trick is therefore in knowing when to borrow.

This is where an Infrastructure and Asset Management Plan that is at least twice the period of the Funding Plan becomes an indispensable tool.

Say you have a large renewal expenditure in the current funding period—should you borrow to fund it?

The answer is to look at what renewal expenditures you have coming up in the next funding period. If renewal is increasing then any borrowing you do now will make your future problems worse! Instead of smoothing they will exaggerate spending peaks and require you to increase rates, charges and grants in order to pay off the debt.

Of course you could simply borrow again—but unless you know that you are going to have scope to repay without large increases in other funding sources, this is not management, this is just shutting your eyes to inevitable chaos.

Funding renewal based on an infrastructure and asset management plan provides the information required to choose the appropriate borrowing strategy.

The above refers to borrowing to (temporarily) increase the amount of available renewal funds.

There is another purpose for borrowing—and that is to manage cash flows.

Borrowing as a means of managing cash flows.

When you are funding renewal you know when you will need to use the funds you are raising. If they are needed towards the end of the period you can invest them now in short term loans so that they will be available to you when needed,

Or you can use the funds to repay loans so that you will have borrowing capacity when needed.

This is not the same thing as borrowing to increase the level of available funds although it may look pretty much the same to a casual reader of the financial accounts. When you are managing cash flows you are borrowing to fund renewal, you are simply recovering the money that you have put away in reserve. It is equivalent to investing in short term loans but it may be more profitable if the borrowing rate is higher than the lending rate which it usually is.

Management of borrowing is made possible by the information that you have to hand because you are funding renewal rather than funding depreciation. If you were just funding depreciation you would only need to know the annual average amount of asset consumption. This does not help you make the borrowing decision—for this you need to know the distribution of consumption and its renewal over time!