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STRATEGIC ASSET MANAGEMENT

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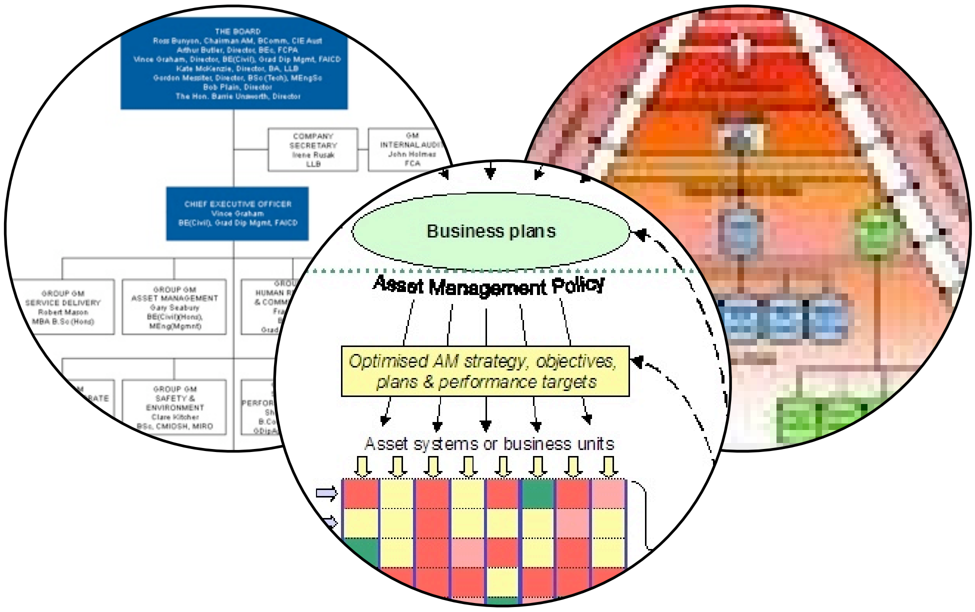
For Practitioners, Policy Makers and Planners in Public Infrastructure



Structuring for Asset Management

We don't always have a choice on how we will structure our asset management section. It may be imposed on us as part of a bigger organisation wide decision, or we may have inherited what was there before we arrived. Sometimes the choice is ours. But always we have the choice to make the best of what we have got.

So for those who can choose, and also for those who cannot, I look at the pros and cons of some different asset management structures with references to many past issues that have tackled aspects of this question.

Also in the current issue: I look at 'the magic number' and various formulaic approaches to **"Allocating Maintenance Allocations"**, and in **"Value, Valuation and Performance"** - in which I ask, and hopefully answer to your satisfaction, what the relationship is between value and valuation, and how you can use valuations to measure and improve performance.

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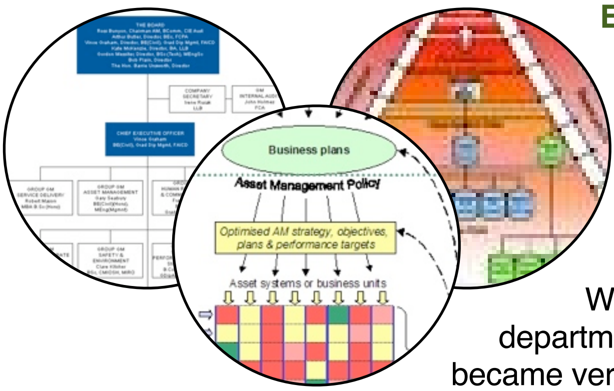
Editorial:



The Magic Number

When I became policy manager at a state public works department many years ago, the head of the department became very excited and told his colleagues that they now had someone (i.e. me!) who could tell them the 'magic number'. This 'magic number' was the percentage of asset value that needed to be allowed for maintenance. There is, however, no magic number. The percentage of asset value needed for maintenance is not a constant that one can apply to determine funding allocation. It varies from year to year, from asset to asset, from maintenance program to maintenance program. Once, in an attack of pure frustration I wrote an article for SAM entitled "If 2% is the answer, what's the question?" You will find it in Issue 39 and if you still think that this mythical figure really exists, please read that article.

Today, whilst many engineers would probably would like to have a budget allocated to them that they did not have to justify (who wouldn't?), they know that the magic number is just that - magic! Because they know that much maintenance is periodic, not constant; that it tends to increase as assets age, and can vary greatly according to the nature of the assets concerned.

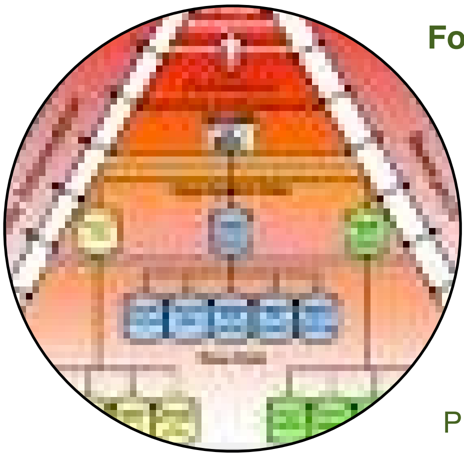
However, the idea of a magic number that relates maintenance to asset value, may have appeal for finance and accounting officers whose whole work is bound up in numbers and ratios. Without the technical understanding of what lies behind those figures as far as maintenance is concerned, it is easier to assume a reasonable 'fit' where in fact there is none. And so with the greater interest in asset management now being taken up by the accounting profession, I would like - especially for all finance and accounting asset managers out there - to reprise the highlights of an interesting discussion I had some years ago with a Director of Finance who wished to take a formulaic approach to asset maintenance allocation but had the good sense to query it first.

So in "Re-View" this week (pp 7-8), I look at ways in which we could allocate maintenance funding - with the strengths and weaknesses of each.

I also take a 'pros and cons' approach to how we organise ourselves for asset management. Over the years I have cited a number of different ways in which organisations have structured their asset management units. In Leading with Asset Management - "Organising for Asset Management" (pp 5-6) I have tried to bring these all together and look at the varying benefits for the benefit of those about to set up or revamp their organisational structure. Of course, often we find structures imposed on us. In that case this may be of help in making the best of what we inherit.

Finally, in "For Consideration" this week (pp 3-4), I look at the relationship between value, valuation and performance.

Please consider and enjoy! Penny Burns



For Consideration:

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 Manage*r, 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.   (It can be one of the inputs into an asset management decision, but it is 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.

Clearly while we may wish to maximise VALUE,
we do not want to maximise COST.

So 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.*

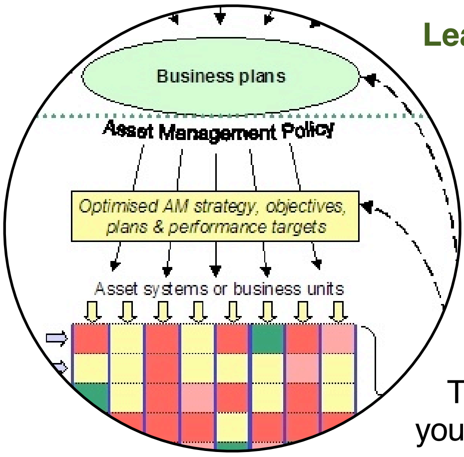
One of the primary objectives of asset management is to determine the maintenance, repair, rehabilitation and replacement strategy that will provide a defined level of service for existing infrastructure while minimizing whole of life cycle costs.

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 *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.



Leading with Asset Management:

Asset Management Structure

Recently there has been interest in the best way in which asset management units are structured. That there are advantages to all arrangements is evident, or they would not be chosen. But the grass still grows greener on the other side of the fence! The disadvantages of the system you work under are very clear to you, much clearer than the disadvantages of other systems.

Over the past few years I have written up some of the interesting structures that successful organisations have adapted (references at the foot of this article) but there is no assurance that any given structure will work for your organisation. It has a lot to do with the culture of the organisation - are you a strict, by-the-book hierarchical organisation or a loose trust-everyone-to-do-the-right-thing show? Does your company encourage innovation? Is accountability more important than service delivery? There are many variations on company culture, no two are alike.

Having watched the evolution of many different forms over the past 20 years, it is hard to avoid the conclusion that it doesn't really matter which structure is adopted, as long as there are strong linkages between the different elements of the asset management task and respect, understanding and co-operation between the people who carry out those elements. (See SAM 160 for diagram)

Asset focus

Some councils may choose to divide up the tasks on an asset basis, others on a functional basis. So that in one, responsibility for infrastructure planning, project overview, maintenance planning and operational oversight for, say, roads and bridges will be with one officer or group, whilst another will take responsibility for city buildings, and still another for parks and recreation facilities, etc. This has the advantage of enabling easy trade-offs between upgrading the capacity of existing assets and purchasing new ones.

Function focus

Other councils may choose to put the responsibility for all infrastructure planning with one group, maintenance with another, operations with another, etc. This has the advantage of enabling development of specialist expertise.

Groupings

Some may choose to locate, say, infrastructure planning within corporate policy or finance, while others may choose to locate it within the engineering section. Whichever choice is made, there will always be a need to build bridges between policy, planning, finance and engineering.

Lines of Responsibility

Should the asset management unit report to the Chief Engineer or the Chief Finance Officer? Or directly to the CEO? The advantage of reporting to the CE may be to generate a longer term view than is possible when reporting is to an officer occupied with the short term problems of the budget. On the other hand, securing the financial support of the CFO to do the job is critical to longer term sustainability. Hamilton City Council in Canada is an example of a council that has the best of both worlds, they report to a CFO who really understands the long term engineering concerns, and supports them. (SAM Issues 223 and 224)

Purchaser/Provider Split One variation of lines of responsibility is the purchaser/provider split, where one group is responsible for determining what is required for customer service delivery (the purchaser) and another for the most efficient delivery of the assets and asset services (the provider). Having said this, almost every organisation has its own variation on this simple division. The advantage of this structure where it works well is that asset service supply is driven by client demand (and not by what resources the supplier has available). The disadvantage is that it can become overly bureaucratic, even to the extent of generating distrust between two parts of the one organisation.

Outsourcing or In-sourcing. When outsourcing was first introduced, great savings were made. But mostly the savings were related not to the fact that the work was done externally, but rather to the fact that *because it was* the organisation had to be more specific about what it wanted and was prepared to pay for. In other words the job specifications were more rigourous. Realising this, some organisations have created a quasi outsourcing, creating internal 'consultants', who are contracted by other sections of the organisation to carry out specified work. This is similar in kind to the purchaser/provider split arrangements above.

Examples from past SAM
(all available to you on the amqi.com website)

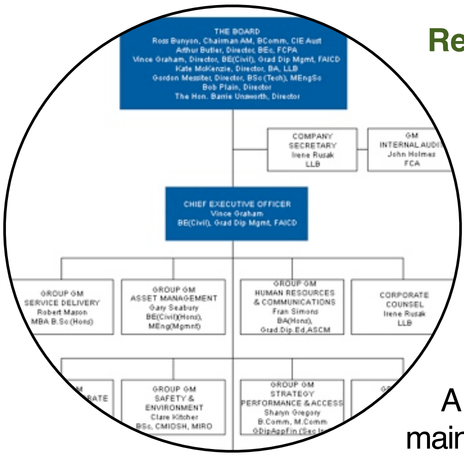
Change may be necessary No one structure may suit an organisation for ever. Times change. In SAM 110 we attacked this issue head on in "What Organisational Structure Best Suits Asset Management?"

Asset management is a strange business In SAM 182 Ype Wijnia, one of the most innovative asset managers I know, who is continually refining the structural approach of his organisation to make it yet better, looks at why AM is a strange business. Funny and beneficial.

Positioning How to be a world class asset manager. This was a series by Dave Openshaw that we ran in issues 157 to 164 focussing on the issues that determine the necessary AM linkages between people and functions.

Challenges/Opportunities Often an organisation will restructure to suit a particular challenge (either internal or external in origin) For example consider Issue **155** a case study of Essent Netwerk, a large electrical utility in The Netherlands that refined its organisational structure to minimise risk exposure. See also **66** and **102**, two case studies on British Waterways that organised themselves to maximise the support of their board and capture the hearts of their users. And way back in Issue **5**, have a look at the innovative approach taken by Onkaparinga Council.

Good AM Organisation Characteristics A few years ago, we ran an international dialogue on the amqi forum to determine what asset managers considered to be the characteristics of a 'good asset management organisation' - you can read the results of the discussion in Issues **145** and **146**.



Re-View:

Allocating Maintenance Funding

Organisations need to fund maintenance on the basis of maximum benefit for the organisation, not on the squeaky wheel principle. But realistically what are the options?

A finance director at a University rang me about the idea of allocating maintenance funds in proportion to depreciation. He had current values as the basis for his depreciation and the age and composition of the asset stock actually varied little from place to place, so that it seemed a reasonable way to proceed and made good use of his asset management data. He argued that it could be seen as relatively impartial and to be related to the asset characteristics rather than to personalities.

Agreed, but there are nevertheless still problems with this approach and there is a better way. But first a look at the various allocation options:

1. Status quo, as a basis for modifications
2. Case by case, on the merits
3. Formula allocation
4. Asset maintenance plans

Status quo, standard modifications As last year, plus or minus - same rule for everybody,

Comment: Has the benefit of seeming impartial, not influenced by the 'squeaky wheel'. However it is not influenced by anything - including changing requirements. It also begs the question as to how the original allocation was determined.

Case by case based on applications and judged 'on merit'

Comment: Has benefit of being able to take into account changing requirements and unforeseen problems but it is difficult to establish priorities because of lack of *evaluation criteria*, hence the predominance of 'squeaky wheel' -those who petition best (or shout the loudest) get the most

Most organisations combine 1 and 2. However the obvious problems associated with these allocation mechanisms has encouraged others to seek solutions in relatively objective formulas.

Formulas:

Service Volume (e.g. number of students, staff, customers, etc. in a department)

This formula is often appropriate for use based operational costs but not so useful for maintenance where the age of the asset is one of the determining factors of need, so this is often modified to:

Service Volume *plus age of assets*

This is an improvement in that it does allow for increasing maintenance as assets age but it implicitly assumes that it is smoothly incremental, whereas in fact we know that much asset maintenance, like renewal, is periodic, and this is not allowed for

written down costs (either historic or current)

Maintenance based on written down costs is perverse because newer assets are at their full cost, therefore have higher values and get more maintenance allocations but have lowest need

full historic cost (ie not written down)

This is also perverse, because newer assets have higher values since they are in current dollars, inflation has the effect of diminishing the historic costs of older assets, so whereas, on the whole, they need more maintenance, this formula gives them less. (Written down historic costs compounds the perversity)

replacement cost

This is the best of the asset value options; but tends to advantage those sections of the organisation that manage large passive civil structures where the replacement cost is high (but the maintenance costs proportionately low) and those sections with lower value mechanical/electrical assets that have a relatively high maintenance requirement will get less than they need.

in proportion to depreciation

This would, at first blush, appear to take into account the problems with replacement cost above, provided that depreciation is on a replacement cost basis. (With historic cost, there are all the problems of historic cost values mentioned above.)

The use of depreciation in the allocation formula brings back the balance that is missing with the total asset values approach since now long living passive assets have lower maintenance allocations that reflect their longer lives. However it does not overcome the problem that maintenance requirements are greater for older assets than for new.

As a rough rule of thumb one could weight the Current Cost Depreciation figures by the ratio of the Current Value to the Written Down Current Value. Using this rule, new assets would have a weighting of one. The weight attached to an asset would increase as it aged - thus reflecting the increasing maintenance requirement. It is not precise, but then formulas never are. It still has the problem that it assumes a smoothly incremental maintenance requirement that ignores the periodic maintenance realities. But it is probably about as good as you can get with a relatively simple formula.

More complex formulas can rapidly get out of hand and fail to generate the simplicity of understanding and appreciation that usually commends their acceptance by clients.

The better way: Asset Maintenance Plans

With all formula approaches the money comes automatically and is not related to the actual maintenance operations that will need to take place.

A far better approach is that of asset maintenance planning. An asset maintenance plan is a forecast of future cash flows for maintenance activities which are fully backed up by a listing of the service demand and condition based or technical assumptions which underly them. Asset maintenance plans are part of a total asset management approach.

Once all of the assumptions have been listed they can be checked for consistency with the corporate goals and with each other. This checking procedure is also used for assigning priorities to those assets which most serve the overall corporate needs. Unlike the formula approach which assigns maintenance purely on a supply side basis, the asset maintenance planning approach allows corporate service demand requirements to be factored in.