

**Issue 275**  
**September 21 2009**

## **How can I get more spent on MY asset?**

**Our practical problem this issue is funding and support:**

**The Situation:** Your 'gut feel' tells you that you are not spending 'enough' (enough money, enough thought, enough effort) in a certain area. But 'gut feel' doesn't get you very far with decision-makers so you look around and examine those areas that **are** being funded well, **do** have good quality staff assigned, and **are** taken seriously by those that count.

**You decide to apply the techniques in the successful areas to your own.** So you catalogue and analyse the techniques that work in the successful area and develop parallels in your own area.

**Our exemplar this issue** is from Anna Robak, who is doing just this to develop a case for greater investment in water infrastructure. Anna's gut feel tells her that water is of major importance to our social, environmental and economic well-being and yet it receives far less attention and, importantly, far less investment, than does, for example, roads. And she asks whether she can apply the techniques that transport economists have used so successfully over a long period, to improve the level of investment in water infrastructure. You can apply this comparison technique anywhere.

**Think of this issue as interactive!** Just as Anna's ideas may be useful for you - YOU may be useful to this young PhD student. She would be grateful for any suggestions you can make. Please help if you can.

**And Note:** Specialists can always clearly see the need for more to be spent on *their* speciality, and asset managers always want more spent on *their* asset. But is it justified from a corporate perspective? The answer is: You won't know unless you test it. So try out Anna's approach and see if it works for you.

**Also in this issue: Help for the Building Asset Manager, pp2-4**

**Editor: Dr Penny Burns, AMQ International**  
PO Box 75 Salisbury South Australia 5108  
Telephone 61 (0) 8 8359 0559  
Email: [amqi@amqi.com](mailto:amqi@amqi.com) Website [www.amqi.com](http://www.amqi.com)



*Cubic Houses (Rotterdam, Netherlands)*

## **Building Asset Managers**

**- is this how you see your daily tasks? Everything heaped on top of everything else?**

### **Building AM is a daunting challenge!**

It is a daunting challenge for anyone to take over the role of building asset manager, whether for a large building owner such as departments of housing, education, corrections or health, or for a council. Indeed, in councils where much has been done to ensure good asset management for infrastructure networks such as roads and water, it is still often the case that building asset management lags behind.

### **Why does Building AM lag behind Roads?**

I think that there are two reasons for this:

**one** - the value of roads greatly exceeds the value of buildings for just about all councils; and

**two** - managing building assets is more difficult because, unlike roads, the task is less technical and more strategic.

### **Roads are simpler than buildings**

Roads have basically only two renewable components- seal and pavement and although one can make the task more complicated by adding in kerb and gutters, road shoulders and roadside vegetation, traffic control, signs, street furniture, etc, these extra elements generally do not affect the life determination of the main components.

This is not so with buildings. For the renewal forecasts that I did for public housing I needed 26 components and sub-components to prepare even the most basic model. And this was 25 years ago! More recent models constructed for the Treasury in Victoria have required even more detail.

## **Road lives are fairly easy to predict, buildings are not**

One can predict the renewal requirements of road seal quite well simply by knowing the physical and usage conditions of the road, and the same applies in general to the road sub-structure. Therefore it makes sense to say that the road seal or pavement is x% through its life.

However, it is not possible to make such a statement for buildings - and to have it mean very much at all! In general a building can last just as long as anyone wants it to! Some buildings may need radical refurbishment after as little as 15 years (or even less for high end entertainment centres). This is not determined by the physical condition of the asset - but purely by its functional and aesthetic appeal to users. Function and performance are the major determinants of building life - not condition. Aesthetic appeal is the reason why foyers are often the first to be refurbished while renewal of the more functional areas of the building are deferred.

## **Road condition assessment and correction are largely technically driven, building renewal is highly political**

This puts road asset management mainly within the control of the technical/operations arm of an organisation. Yes, you may have to argue the case with politicians who have political agendas for certain road segments - but this is as nothing compared with the case for building renewal which is almost all political, because the decisions have more to do with aesthetics and function than they have to do with condition.

For all these reasons, building asset management has generally been the poor relation. But rejoice! Blessed are those who hunger for knowledge - for they shall be satisfied.

## **Now Help for the Building Asset Manager is at hand**

The IPWEA have released their third set of practice notes -

### **Building Condition and Performance Assessment Guidelines.**

I found these guidelines to be easy to understand and comprehensive without being overwhelming. Consistent with the IIMM's approach to infrastructure, they cover the task of setting up proper building registers and information management as well as condition and performance assessment. Sections also deal with service levels, risk and criticality and, importantly, distinguish the records needed to satisfy accounting requirements as well as renewal planning.

Really valuable is the 'Quick Guide', which in just 6 pages provides the Building Asset Manager an overview of the basic elements of the job and refers the reader on to the more detailed sections of the guide.



The Guidelines are the joint work of Peter Way for NAMS-AU and Steve Lyons of SPM Consultants Pty Ltd. SPM was responsible for the NAMS-NZ Property Manual, that we have reviewed before. The Guidelines have been vetted by practitioners from councils across Australia.

Not only can templates be downloaded from the IPWEA website to get you up and running quickly, but proprietary software is also available that links to the Property Manual.

As with the IIMM, the Guidelines take a 'core' and 'advanced' approach, with flowcharts for each.

### **Appendix 6 - Building Functionality (and Strategic Asset Management)**

From a strategic point of view, this appendix was most interesting for me. This is strictly speaking not the role of the building asset manager, but rather a role for the corporate asset manager (working in conjunction, of course, with the man on the spot). Where **core** asset management restricts asset management mostly to condition and to the most critical buildings, and **advanced** asset management extends this work to include PQS (property quality standards) 'where appropriate', we need a further category of excellence for those really advanced organisations where **Corporate/Strategic Asset Management** picks up the challenge of integrating building functionality into asset planning.

**You may also find the previous articles in SAM to be of interest.**

**And for those who are considering the strategic aspects, some previous work in SAM may be of interest:**

**SAM Issue 59** - on helping users to articulate what functions they require in user language - and then matching those user requirements to technical supply functions.

**SAM Issues 81 & 82** - improving and incorporating building maintainability into contracts

**SAM Issue 118** - estimating the functional lives of buildings

**And one for the photo album - Ripley's Building - Believe it or Not - Ontario, Canada.**





## Justifying Investment - Using the techniques of the successful.

A 'How-to'.



Anna Robak looks at the strength of transportation economics as a discipline and applies the techniques to water investment

### Step One

The strength of transportation infrastructure economics is likely due to a combination of factors, including the following:

- **Commercial.** The main purpose of roads and highways is to trade goods and services, which means they are driven by economic benefits which are easier to put into monetary terms than are social and environmental benefits. Conventional transportation project appraisal captures the most significant economic benefits through time travel savings (Department for Transport 2006). Water supply projects, are generally driven by social needs, and are more difficult to quantify.
- **Recognised academic discipline.** Due to its commercial nature, transportation economics is a well-funded discipline, with much of the research and development funded by organisations that benefit from supplying roads. Organisations supplying water infrastructure, do not appear to have pooled resources in a similar way.
- **Growth.** New roads promote increased economic growth by increasing trade linkages and reducing travel times so that more and/or lower cost trips are possible. Water are mainly concerned with *sustaining welfare*. New treatment facilities are likely to be put in place because the source water quality has degraded; water supplies are therefore more for preventive purposes than for 'progress'. For some reason, progress pulls more weight than sustenance.
- **Visibility.** We can see when the condition of a road surface is deteriorating, or when there is an accident due to surface condition (slippery surface) or road alignment. With water supply, we generally cannot see that pipes are leaking and we often are not aware of water-related illnesses in the community.
- **Limited number of variables – 'ease' of predictive modelling.** As roads are visible, it is easy to collect a significant amount of temporal data on their surface conditions for predictive modelling. While underlying pavement strength and construction

quality add some uncertainty, in water supply the uncertainties are far more plentiful, including i) likely pollutants in the source, ii) effective plant operation, iii) potential growth in the reticulation, iv) likely virulence, and v) likely health effects. In addition, whereas road performance can be predicted primarily through a single discipline, civil engineering, understanding water supply performance requires an understanding of civil engineering, biology, chemistry, electrical engineering, and epidemiology.

- **Political.** Transportation projects –being so visible to the public – makes them ideal for political grandstanding with great electoral potential. In water supply the public does not see a problem until there is a catastrophic break or an outbreak.
- **Economies of scale.** Road projects are less susceptible to economies of scale than are water supply projects. Road projects can often be developed in sections and still provide user benefits. Water supply requires a significant capital outlay because it requires development of a source, treatment facilities, storage facilities, and reticulation. Much of the capital cost is in site establishment; installing the intake, digging the trenches, and erecting the treatment building and reservoir. Smaller populations tend to have a lower population density resulting in high cost per beneficiary.
- **Inter-regional use.** Road projects are used by more than just the local population; they encourage external use, bringing in trade from other regions. As the cost of some roads is shared across regions, even poorer communities may have high quality roads.
- **Low operation and maintenance costs.** Compared to water infrastructure, annual operation and maintenance costs for roads are low. Roads may require small patching jobs and a reseal every 6 to 20 years resulting in annual expenditures at approximately 2.5% of replacement value. A water treatment plant can generate 10% of its initial capital outlay annually in operating and maintenance costs.

*It may seem as if transport economics has everything going for it and that there is simply no way you can compete. But don't give in. On the other hand, for the optimists amongst you, this analysis may suggest new avenues of justification for your chosen infrastructure. Move on to Step 2.*

## Step 2.

*Anna looks at how she can match the techniques used in Transport to her Water Infrastructure Area.*

For each element that Transport Economics use to cost justify their expenditure, she seeks a matching element in her chosen area of Water Infrastructure. On the next page is a comparison table.

**Table:  
Comparison of Existing Transportation Analysis Procedures with  
proposed procedures for Water Supply \***

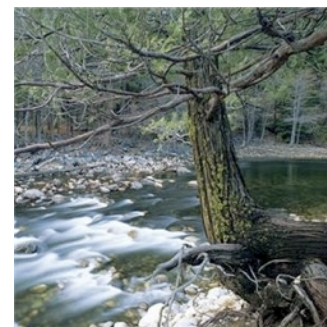
<b>Transportation (existing)</b>	<b>Water supply (proposed)</b>	<b>Transportation (existing)</b>	<b>Water supply (proposed)</b>
<u>Maintenance costs</u> Historical and projected maintenance costs compared to projected maintenance	<u>Maintenance costs</u> Same, incorporating operators' attendance and travel time		backup plans or reduced business productivity due to unplanned service interruptions or water quality excursion, plus frustration costs on time value
<u>Structural bridge renewal</u> Travel time benefit of heavy vehicle access	<u>Time value and equipment costs (access)</u> Time and equipment costs of procuring and treating own water		
<u>General road improvements</u> Use of quick reference tables for vehicle operating costs	<u>Operating costs</u> Produce lookup tables for pump costs or chemical dosing alternatives	<u>Vehicle operating cost</u> Additional running costs (fuel, etc) due to surface roughness, speed, terrain, congestion	<u>Energy, chemical dosing, operations costs</u> Additional operating costs due to pump start-stops, choice of chemical dosing
<u>Seal extension benefits</u> Comfort benefit value per kilometre and productivity gains for farms	<u>Time value and equipment costs (access)</u> As above	<u>Accident cost savings</u> Medical costs, standard value of life, legal fees, property damage	<u>Cost of illness, accident cost savings, damage</u> Same costs related to illness
<u>Isolated intersection</u> Travel time, vehicle operating costs and accident reduction as discussed elsewhere in this table	Not applicable	<u>Vehicle passing lane benefits</u> Travel time savings as address above	Not applicable
<u>Travel time (improved flow / reduced congestion)</u> Time value of time lost in speed cycle changes, shorter duration trips	<u>Time value and equipment costs</u> Time value and equipment costs of backup plans or reduced business productivity due to routine low flow or pressure	<u>Other impacts (noise)</u> Based on median property value and decibel noise increase	<u>Other impacts (noise)</u> Applicable mainly to noise effects of pumps and equipment on operators
<u>Travel time (reliability)</u> Time value of predictability of trip duration	<u>Time value and equipment costs (service disruption)</u> Time value and equipment costs of	<u>Other impacts (Vehicle emissions)</u> Based on particulate matter	Not applicable
		<u>Other impacts (external, ecological, visual, community severance, overshadowing, isolation)</u> No specific guidance	Not applicable

\* The New Zealand Transport Authority (NZTA) has developed an Economic Evaluation Manual (EEM) to evaluate BCR's for transportation projects (NZTA 2008). The table shows the proposed analysis categories for water infrastructure based on each category in Volume 1 of the EEM.

## Step 3.

### *Operationalize your categories.*

(Just two are given here, but see Anna's full paper for details on operations, service disruption, cost of illness and accident and damage costs amongst others. Also other ideas on investment justification. Details below.)



#### **Example: Maintenance costs**

Maintenance cost = replacement parts + operators' attendance time + response to public + additional treatment costs + property damage

**Replacement parts + operators' attendance time.** The maintenance cost method is based on the cost savings derived from maintaining a proposed option compared to maintaining the do-minimum scenario. Standard maintenance cost curves can be developed for expected replacement parts and attendance time for different pipe materials, sizes, flows, water quality, and suspected water hammer.

**Response to public.** If the need for maintenance is brought to the supplier's attention by a member of the public there will be administrative costs associated with responding to the complaint.

**Additional treatment costs** may result from water that is treated and subsequently lost from the reticulation. We recommend valuing the treatment and pumping costs associated with the additional water.

**Property damage.** Maintenance or replacement costs may be incurred by the user if a break damages property or if the water quality causes more rapid deterioration of the customers' fittings or businesses' equipment, and the damage caused by salinity.

#### **Example: Access costs**

Access costs = equipment / vendors' fees + travel time

**The costs associated with access** would be alternative methods of procuring water, such as wells, vendors (including the costs associated with travelling to vendors), and/or household treatment. In developed countries there may be no cost savings associated with household access to water supply; however, there may be cost savings to businesses or plants that use significant amounts of water. According to PWC (2004), only 58% of water supplied by local authorities in New Zealand is used domestically. Conversely, industry sources only 66% of its water needs itself.

**The value of time** In developing countries much time is spent collecting water. Traditionally this time has been described as difficult to value, but the Genuine Progress Indicator (GPI) recognises the value of domestic work, based on the rates that would be paid by hiring someone to do household or childcare. People – generally children and women – who fetch water could be otherwise occupied doing housework, productive labour, or gaining an education. The time travel savings can be based on the opportunity cost associated with these other activities, or on the sum that would have to be paid to a water vendor.

**Further Information:** "Do Transport and Water Supply Infrastructure have the same benefits?" A paper by Anna Robak and Henning Bjornland, University of South Australia, to the IPWEA National Conference, Melbourne, September 2009. [anna.robak@postgrads.unisa.edu.au](mailto:anna.robak@postgrads.unisa.edu.au).