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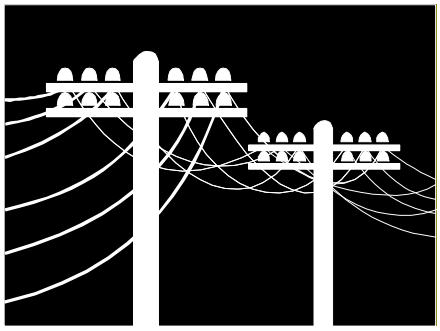

COULD YOUR INFRASTRUCTURE ASSETS BECOME OBSOLETE?

- **Could a telecommunications-like revolution affect the use and value of YOUR infrastructure assets?**
- **How can you tell?**
- **What can you do about it?**

David Hope, former President of the NSW Branch of the Australian Water Association and currently the AWA's Federal Director for Interest Groups, presents some crystal ball gazing for the future of those traditionally most stable of infrastructure assets – water and wastewater systems. The full text of his paper "A brief history of assets—white elephants of the future?" can be found on our website **www.amqi.com** Here we look at just two aspects of his interesting paper: See 'For a Perspective on the Future, Look at where you have been in the Past' and 'Natural Capitalism and its Impact on existing assets' On pp.42-43

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'TO GET A PERSPECTIVE ON THE FUTURE, LOOK AT WHERE YOU HAVE BEEN IN THE PAST'
DAVID HOPE

One of the ways in which we can 'sensitise' ourselves to future changes that may impact on infrastructure, is to take stock of the changes that have already happened. This technique is advocated for any future planning, for example, the forecasting of the need for renewal and modernisation and in the development of your Asset Management Strategy. In this excerpt, David Hope looks at the development of a typical Australian urban utility through various historical stages. He writes:

Changing Objectives

"Urban water authorities in Australia, in common with most other places in the world, came into being to provide clean drinking water for the protection of public health against cholera and other water borne diseases. Later challenges included:

- securing sufficient quantities of water often through the building of dams
- providing satisfactory water distribution systems
- building sewerage systems to protect the environment and public health
- responding to the growing expectations of the community and the impact of competition policy

Construction Focus

Water authorities were generally invested with strong powers and were, by design, fairly independent from governments. This independence was thought to be necessary to ensure that the building of long-life infrastructure was not compromised by shorter-term considerations, which often motivate elected governments.

Things began to change as Australia became more prosperous after the Second World War. People began to become more generally discerning as "customers" and were less accepting of "authority". Governments began to change laws to give themselves more say in the running of the "Authorities". The Authorities themselves responded by changing to less bureaucratic management structures, and by introducing concepts such as "customer focus". Terms such as "the ratepayers", which had overtones of ownership of the people by the Authority, started to disappear.

Commercial Focus

By the 1990's, Governments had begun issuing "Licences to Operate" which can be awarded to others if the performance of the incumbent is not up to scratch. "Authorities" had become "companies" who were expected to perform commercially and competitively, whilst meeting increasing customer expectations, health and environmental standards, and other regulatory requirements, notably workplace safety.

"The Water Companies are facing the future with infrastructure which has barely changed in its concept for delivering services since the infrastructure was first installed."

This infrastructure continues to be constructed and renewed as though it will provide a monopoly to the licence holder forever.

The risk to the water companies is that this infrastructure, with a book value of over $50 billion in Australia, may be rendered worthless, almost overnight, by a paradigm shift in technology. Will water industry assets become white elephants sometime in the future, and how should water companies deal with this prospect.

All infrastructure asset holders need to ask themselves the same question. The natural reaction to any threat to the monolithic position and authority of major infrastructure owners is to repel, rather than embrace, new ideas. This, however, could see the infrastructure overtaken rather than adjusted. David Hope draws from the ideas of "Natural Capitalism" (similar in approach to the concept of the 'triple bottom line') for changes that may be forced upon the water industry. (see page 43)

'NATURAL CAPITALISM AND ITS IMPACT ON EXISTING ASSETS'
DAVID HOPE

"It is possible to imagine that consumers may one day disconnect from their mains water and sewerage system - thus rendering our now revered assets worthless.

Lovins, Lovins and Hawker (Harvard Business Review, May/June 1999) advocate a move by industry to what they call "Natural Capitalism". This approach seeks to put a true value on a scarce resource, nature, and to seek ways to redesign business and production processes to dramatically reduce the waste of resources, at the same time improving satisfaction and business profitability.

The water industry is certainly ripe for the Lovin's treatment - with its profligate use of water for sanitary and other purposes. By adding massive amounts of water to other "waste" we create high costs for transport and treatment, and use large amounts of energy, at the same time making it much more difficult to treat some pollutants. The "New Capitalism" approach, apart from being perhaps price competitive, may give a new competitor an ethical competitive advantage while, according to Lovins et al, "companies perceived as irresponsible lose their franchise, their legitimacy, and their shirts".

In a short article I wrote recently for "Water" magazine (2000), I outlined a number of technologies that have the potential to become inexpensive commodity technologies and to replace the older, less environmentally friendly methods. They have the potential to allow customers to disconnect from mains water and sewerage systems and might also pass the "Natural Capitalism" test.

Possibilities for a Paradigm Shift?

- Composting toilets, which are already a reality. Further refinements in design could make waterless toilets odour-free "fashion items", with easily removable capsules which could be collected with the household garbage or used on the garden.
- Cooking can already be done with little water in a microwave oven. The future may see the greater use of partially processed food, which requires less preparation and cooking.
- Clothes may be made of materials (or treated with chemicals) that can be cleaned by simply shaking, or by being "washed" in some waterless appliance.
- Showers, baths and handwashing could be replaced by some waterless electro-mechanical people-cleaning device. Alternatively, a finely controlled air-water spray "cleaner" requiring minimal water use may be perfected.
- Water treatment machines - about the size and cost of a dishwasher - may treat any grey water produced and allow recycling for household and gardening requirements. These requirements could be supplemented by rainwater tanks, or with larger machines for commercial and appropriate industrial uses.

Far-Fetched?

Ed: Some of these may seem far fetched – but could we really have imagined the concept of microwave ovens earlier in our history, did they not initially seem equally far fetched? Senior Managers need to consider a wide range of ideas and alternative scenarios. Like battleships, large and expensive infrastructure systems need a long lead time to change direction. *Consideration of alternative scenarios and the way in which they may impact long living infrastructure assets should be one of the elements of the Asset Management Strategy.*

Utilities Asset Management Conference (Sydney, IIR, May 1-3)

David Hope is one of the speakers at the forthcoming Utilities Asset Management Conference.

Also speaking are **Simon Terry** from New Zealand, who will be looking at the need for a new valuation method for utilities (see SAM, p), **Niels Nielsen** from Canada who will be talking about strategic software systems that put management first (see SAM p)and Niels articles on the www.amqi.com website, and **Fattah Hashem Zadeh** from Carleton Water in Canada, who was the runner up in the last International Asset Management Competitions.

You can get full details of the conference line-up from the **Conferences Page** of the **www.amqi.com** website.

DATA STOCK-TAKE: WHAT INFORMATION SHOULD BE COLLECTED AND WHY?

STEPHEN HOWE

In the last issue, we looked at the data stock-take approach used by Stephen Howe, Boroondara Council.

At one level, a data stock-take can just tell you what to discard, what to archive and what to clean up and use. At this level quite broad information fields may be sufficient. But if you wish to go further and develop a clean up program, more attention needs to be paid to the data audit fields.

Each asset class will need to have its own particular attributes listed, but Fig 1 indicates the range of data used for just one asset class, namely 'bikeways, footpaths and crossings'. There must always be scope to add information that the data auditor considers significant but has not been 'programmed in'. Fields used in the Booroondara exercise are shown in Fig 2

Fig 1. Asset Attributes

List Data Sources
Asset ID No.
Asset sub group/type
Parent Asset
Location (Street Name & No.)
Unit Cost ($/m or other unit)
Year constructed
Condition rating & assessment data
Theoretical Effective life of current asset
Current Replacement cost (as new)
Written down current cost
Asset replacement reserve
Pavement/seal details
Current unit cost of treatment ($/unit)
Consequence of failure rating
Priority ranking for maintenance
CPI index for Re-evaluation (%)
Method of depreciation
Capital Cost (as constructed)
Cross section details and pavement area
Traffic data
Rehabilitation history

Fig 2 Scope for Additional Asset Attributes

*Other Asset Identifiers
*Other Detailed technical data
*Other Valuation data
*Other Maintenance data
*Other Condition data
*Other Predictive data
*Other Performance data
*Other Risk Data
*Other Lifecycle Data

Further Help:

- "International Infrastructure Management Manual" Institute of Public Works Engineering Australia/ NZ National Management Steering Group, 2000 and
- "Asset Data Capture Guidelines" Local Government Professionals Inc. 1997

Assessing the Value of the Data

Against each attribute the following information and assessments were collected (* indicates explanation given, see next section) in order to determine whether rhe information was worth keeping. (See "Data Filters" on p.45)

Fig 3 Information and Assessment

Current Owner of Data Source (Initials)
Do we have it (Y/N)?
*Accuracy of Current Data – Inventory
*Accuracy of Current Data – Attributes
% Completeness Current Data – Inventory
% Completeness Current Data – Attributes
Current main data source
Do we want it (Y/N)? (see page 45)
*Priority
*Best method for Initial Data collection
*Best method for Ongoing Data collection
Used for Strategic Planning?
Used for Maintenance Management?
Used for Risk Management?
Used for Accounting (AAS 27)?
Do you want to display this on GIS?
*Action Required

ASSESSING THE DATA NEED

Do We Want It? Yes/No

Personal risk management and the use of 'Archiving'

Ed: Years ago I was in charge of the major database of a state public works authority which was badly in need of data cleansing and streamlining – we were not keeping the data up to date and credibility had dropped. Hundreds of hours were being lost by potential users feeling that they needed to validate the data in the field.

We gathered representatives of all users around a table and agreed that if we, jointly, could find no real use for an item we would delete it. We had not got past a dozen items before one of these 'no use' items appeared and I was about to rule it out when an agonised gasp from the group stopped me. They confirmed that we could think of no use for this item but felt 'we should keep it anyway'.

This is a common problem. No one wants to be responsible for discarding data if there is any chance at all that later someone find a use and point the finger at them. So we end up keeping far too much. It is a form of personal risk management.

Stephen suggests the use of archiving as a way of dealing with this problem. The data is not lost, but it is not retained to clog up the database - it is stored separately; could potentially be brought back into the system later if needed; but in most cases after a few years could be safely discarded. In his information audit, 30% of the data was either discarded (3%) or archived (27%).

At Boroondara, the basic "do you want it?" question is supplemented by the 4 listed uses. If none of are checked, the information is discarded (or at the limit archived.)

This "first filter" can be done by simple "desk top" examination of the survey returns. If the first filter does not reduce the necessary data collection to a reasonable level, further filters can be applied.

ADVANCED DATA NEED FILTERS

- **Is this data available elsewhere?** (the redundancy question – and an important question to ask when you have 403 plus data sources!)
- **Which** of the various sources of one piece of data **is the most readily obtained**? This will generally be as a by-product of operations or maintenance, if available. Then discard the rest, unless they are providing different—and needed—aspects of the same data.
- Is this data that we need to collect **continuously or just periodically?** (For example, utilisation data probably only needs to be collected every 3-4 years)
- **Is the data in an analysable form?** (I know of more than one agency that has thousands of hours of video footage of drain condition, but no way to analyse the data contained in them!)

DATA AUDITS: ARE THEY WORTH THE TROUBLE?

Is a data audit worth doing?
To carry out a data audit, you will need to invest many person weeks of effort across your organisation – is it worth it?

Sources of savings - reducing data collected, entered and stored is a direct source of savings – just ten minutes saved a day for affected staff could amount to large savings for the organisation, and this is on an ongoing basis. But in addition to this, consider the time saving from being able to rely on the data without having to check it in the field; the smaller the database, the easier it is to keep it clean and up to date.

Sources of benefits
In addition to the cost savings above, consider the benefits of better quality information for decision making, for data audits do not just remove the deadwood, they identify data gaps and needed quality improvements.

Data audits also serve as a communication mechanism. It is surprising how many supposedly 'corporate wide systems' are largely unknown to those they are supposed to serve. (This is partly to blame for the familiar personal 'shoe box' data management systems where people collect the information they really need and bypass the general system.)

Communication is needed both up and down the line: operators may not know of the way to use (or even the existence of) relevant corporate wide systems, but equally managers may be unaware of the wealth of data available to the operators.

Data Maintenance
Once the data audit has resulted in a more streamlined, efficient and effective data base, you can keep it that way by:

- ❑ Designing regular data maintenance processes, (preferably as a by-product of operations) and
- ❑ Once a year, conducting a mini data audit check.

DO YOU WANT TO WRITE FOR SAM?
How much to say

In the last issue we looked at the basic presentation requirements for a good SAM article. Here we look at the content. The message is "Don't even attempt to say everything there is to say on a subject – instead, inspire your readers to think of more!"

By way of explanation consider the following:

Scene: *The closing minutes of the "Vicar of Dibley". Geraldine, the Vicar, asks Alice, the Verger, a riddle:*
G: "What is brown and sticky?"
A: (puzzled) "I don't know"
G: (triumphantly) "A stick! - see, 'brown' and 'stick –y'
A: (thinking about it) Well, that's not true, sticks may be sticky if they have sap coming from them, but they are not always brown, they may be green or grey or even white, so you should say: "What is sometimes brown, sometimes grey or olivey-green, sometimes black and sometimes white, and may be sticky?"

At this stage Geraldine gives in to frustration and hits her with a heavy volume! Alice is factually correct – but has completely missed the point!

Which brings me to ***my*** point***: too much detail can ruin the message (or the joke)***

Articles in SAM are like the riddle. They aim to illustrate an interesting point. They don't intend to be encyclopaedic. Sometimes, the consequences of understanding the point could be simply better understanding, sometimes it may suggest a rethink of the way you operate.

If you do the task right, you will inspire interesting responses like the one on the following page to the article by Jeff Roorda and myself in Issue 55 "Sealing Gravel Roads—'Roads to Recovery or Roads to Purgatory" and subtitled 'What will you do with your transport grants?'

Asset acquisition and upgrading decisions need to consider the future upkeep considerations. This means "doing the sums"

SEAL V. GRAVEL: A RESPONSE

In Issue 55, working from data that showed that, although the spread of costs was very wide, sealed roads cost considerably more to upkeep on an average annual basis, Jeff Roorda and I had argued that councils should do their sums before using the latest Federal grants for upgrading.

Even where total benefits exceeded costs, we pointed out that unless the benefits were in a cash form (savings or increased revenues), councils should still be wary. Where benefits were in the form of benefits to the environment or to the wider community, extra funding would need to be secured to ensure that the council remained financially viable.

This inspired Mark Buckland to make the following observations:

Road Costs

> "Lost resources—the sealing of a gravel road ensures the gravel resource is retained. An unsealed road will loose gravel resheet in approximately 5 years through grading, rain and dust. A kilometre of road, 5.5m wide and 100mm deep represents around 900t of material. This equates to around $25,000 worth of material on the ground (incl supply and lay costs). Thus over the life of the resheet, the lost gravel represents $5,000/km/yr."

As was shown in the diagrams on page 23, there is a wide range of costs and where the gravel costs are at the high end of the range (as these are, only 21 out of 394 councils surveyed had costs this high) and re-seal costs are average or lower, there is a very good case for sealing. *It is not a question of 'gravel roads are always better' or 'sealed roads are always better'; it is a matter of knowing your costs and doing the sums, as Mark would be the first to argue.*

Environmental Benefits

Mark also points out that there are environmental costs.

> "Gravel resheets are by nature unbound, they are free to unravel under use and scour by rain, which eventually ends up in the nearby creeks, rivers and bays. The sealing of the gravel road, while it does not eliminate this problem, does reduce the potential amount of material getting into these bodies of water. There is a cost associated with impact of unsealed roads that should be quantified and taken into account."

This is a good illustration of environmental pollution from the way in which we manage our assets. The costs of environmental damage do need to be quantified—but, even more importantly, from the viewpoint of the financial viability of the individual council, the costs of avoiding the pollution need to be recovered somehow. Where the pollution avoidance can be shown to have direct benefits to an identified group of users, a levy may be the answer. Where they are benefits to the community more generally then the options are (1) increase rates to cover the environmental benefits obtained, (2) switch council funding to roads from other programs, or (3) secure extra financial assistance from outside council. *Environmental benefits are not sustainable if the financial backing is not sustainable.*

User Benefits

Mark took me to task for my throw away line that "potholes are dangerous but lack of gravel just results in uncomfortable driving". He points out the potential risk to road users and potential damage to vehicles from lack of gravel, but admits that "these costs are attributable to both sealed and unsealed roads" . *Again there is the necessity to do the sums.*

National Rural Roads Congress, Mildura

These and more rural roads issues will be debated at the National Rural Roads Congress to be held in Mildura, March 26-27, where the themes are, appropriately,

- targeting effectiveness
- resource sharing, and
- private sector involvement

Asset Management Going Global?

What are the success factors?

International interest in asset management has greatly increased in the last five years. What are the factors necessary for its successful acceptance and implementation? For those who have worked overseas, or plan to, I would be interested in your response to the following observations.

I have just returned from Kuala Lumpur where, at the invitation of the Secretary-General for Housing and Local Government and the Honorary President of the East Asian Regional Organisation for Planning and Housing, we spent a week in presentations and discussions - and appeared on a couple of TV programs! Ami Sudjiman-Spinks and Mark Neasbey (both members of the SAM Advisory Panel) and I met with a range of government agencies, including Treasury, the Auditor General's Office, Public Works, the executive head of the Prime Ministers advisory body and the corporation managing the new administrative capital of Putrajaya amongst others.

The experience of considering how asset management could be embedded in the very different culture that is Malaysia, led me to think what features of our economies in Australia and New Zealand have been particularly conducive to our adoption of asset management.

You may think of more, but it seems to me that the following aspects of our culture and public administration, in no particular order, have been particularly valuable:

Success Factors for ANZ AM Adoption

Reasonably flat hierarchical structures
Officers expected (and expecting) to take initiative
A culture of constructive criticism
Promotion by merit (most of the time!) and equal (more or less) opportunities for male and female so that we have full access to all the community's talents
Decentralised decision making
Sound financial, audit and accounting systems (including accrual accounting)
Change is readily embraced
A political system that tolerates criticism and gets it
A focus on assets for 'function' rather than 'demonstration'.

Clearly we should not expect to be able to simply 'transplant' any management practices from one culture to another without taking differences into account.

I would be interested to hear from overseas readers or consultants of their successes in implementing asset management within cultures very different from that of Australia and New Zealand. *Penny*

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