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# How Functionality is Impacting Asset Lives

**(some results from the Survey in SAM # 118)**

**'The Future Ain't What It Used To Be!'**

Assets used to war out through use or simply wear and tear; they still do. But increasingly we are disposing of them when they are still physically fit, but no longer efficiently meet the functional demands upon them. In this issue we follow up on the results of the questionnaire template presented in Issue 118

**Tools and Techniques: Life Cycle Analysis**



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# Age Doesn't *Cause* Obsolescence

...but it can be used as a proxy

**Does Age Cause Obsolescence? Actually, No**

Obsolescence is caused by changes in desired functionality, not by age. However, as a general rule, a building that was constructed 50 years ago is much more likely to be out of phase with current demands than one that was constructed only 5 years ago. And as we move into the future, the more time that passes, the greater the chance that our asset choices now will be out of alignment with our future needs. T

The following comment, while denying the relevance of age, actually makes the point very well

> "The obsolence of the buildings has little to do with their age, or type of construction per se. Obsolescence comes about through gradual divergence over time of the need and the building used to accommodate it. This is an inevitable consequence of evolution of operational models in healthcare. The broad parameters of configuration, planning modules and grid set out are what cannot be adjusted in an older building."

**Yes, but…**

While, in general, one may consider that a building will become obsolete in x years, there will be those particular building types we have in mind that will last longer (or shorter). Where it is possible to identify such building types (or elements) - and where *the significance of the type or element makes it worthwhile* - they can be modelled separately.

For example, if it is known that all houses constructed pre World War Two had tiled roofs and those constructed after had corrugated iron roofs, we can make allowance for this in our assumption of longevity of building structures. Or, if aged care residences constructed in a certain period were to a design now inconsistent with new standards for care and does not lend itself to retrofitting, then we can use this information in determining that this subset is now functionally obsolete, even if older residences may not be.

## Results of the Survey in SAM #118

**Indicative**

While the number of responses are not sufficient for detailed statistical analysis—and nor was it ever expected that they would be—nevertheless, the responses have provided some useful insights. Even more intriguingly, they have thrown up some curious questions, e.g..

**Why are asset manager's responses even more variable than non-asset managers?**

| | |
|---|---|
| **Acute Health*** | **23** |
| **Aged Care Residential *** | **7** |
| Corrections | 2 |
| Housing | 5 |
| Schools | 7 |
| TAFE | 1 |
| **Total 44**** | |

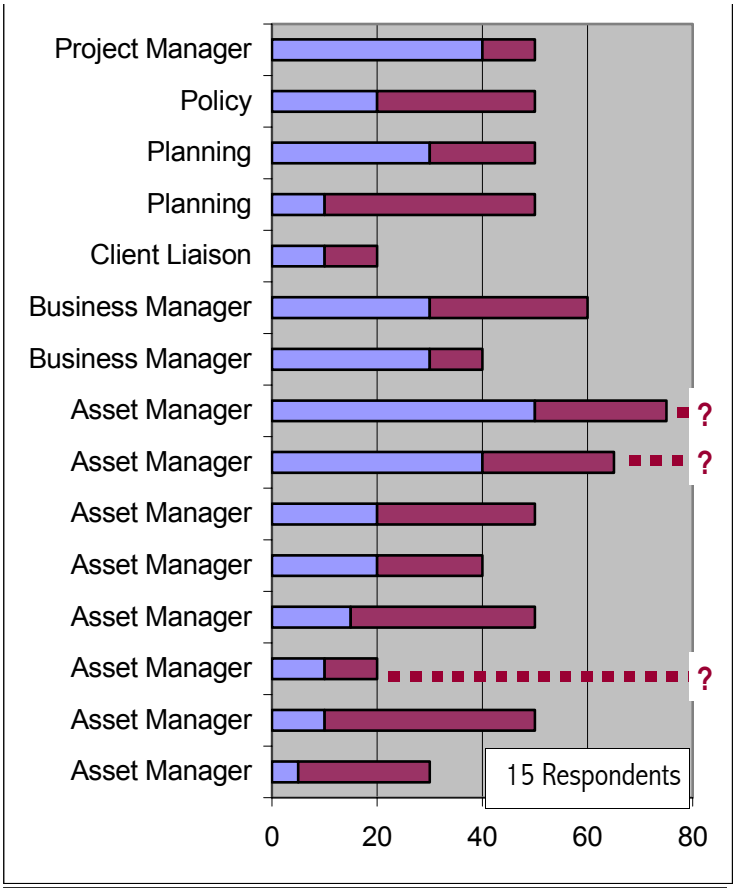
*** The focus of results discussed in this issue**

** not all responses were fully useable

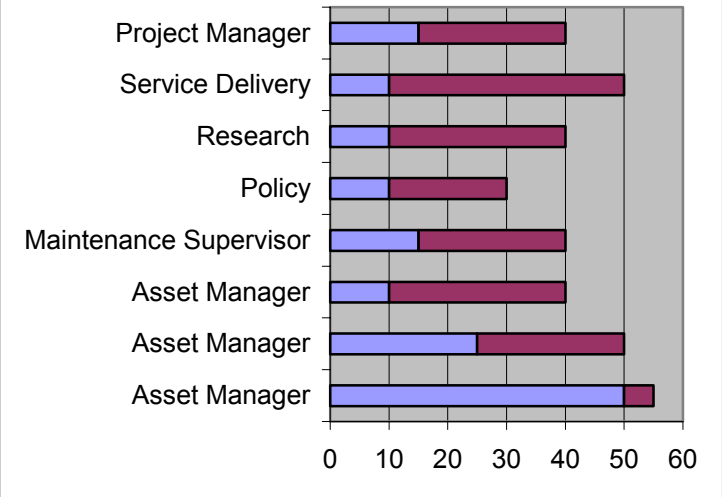
# Do you see what I see?

How different roles in an organisation see the asset life cycle

## Hospitals—Building Structure




## Aged Residential Building Structure




### Hospitals

There is considerable variability in the age at which respondents considered the first signs of service deterioration to start to show with respect to building structure (e. g. the foundations, structural support, external façade). This is the light blue bar opposite

There is also considerable variability in the age at which building structure is considered to be functionally obsolescent (the dark bar)

Three of the asset managers declined to give an end date, pointing out that this could be considerably affected by the maintenance and renewal program adopted.

The prevalence of 50 years as the 'end date' (5 out of 15 responses) could reflect an 'anchoring' caused by the existing 'depreciation life'. This does not have so much impact on asset managers who are closer to the issue, but asset managers tended to be more variable in their responses than non-asset managers. Why?

### Aged Residential

There is more consistency in respondents views on aged care residential buildings. If we discount the two outliers, for the rest the age at which aged care residential buildings become functionally obsolete is between 40 and 50 years.

# How Is Service Delivery Impacted by Age

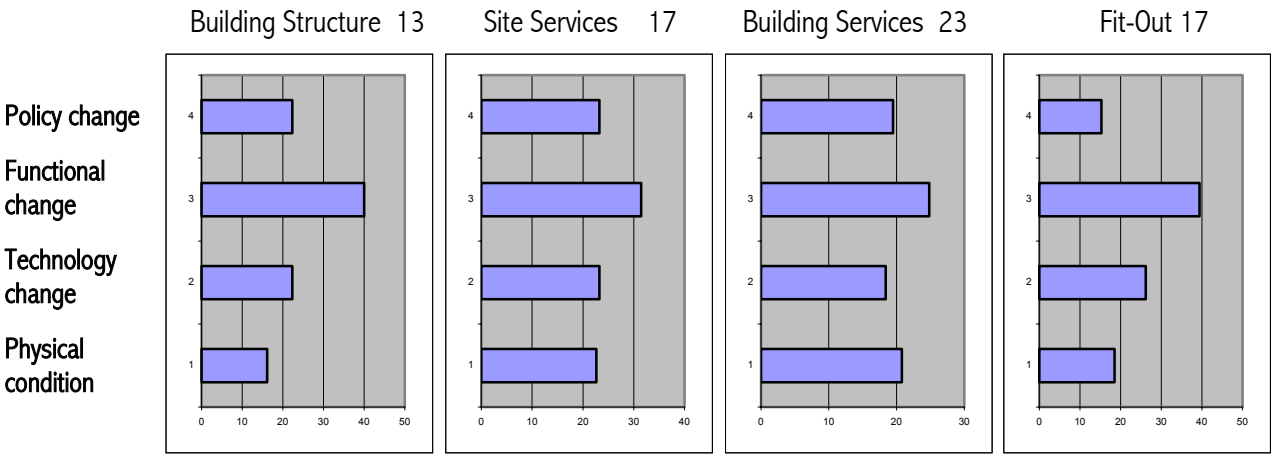
What are the important factors?

Respondents were asked to indicate the percentage influence on service delivery that they felt were contributed by the following factors:

- Changes in regulatory or policy requirements
- Changes in functional requirements for service(
- Changes in building technology or service delivery technology
- Degradation of physical condition

And they were asked to answer separately for each of the four major building elements identified. Not all respondents felt able to answer for all elements. (Number of respondents for each element are given below) Individual answers were quite variable but overall, this was the general picture for hospitals

**Impact of Obsolescence Factors on Building Elements—Hospitals**




**Policy Change**

Has most impact on services—both site services and building services. This is likely a reflection of both environmental and health and safety standards changes that we have seen in recent years.

**Functional change**

Most important factor impacting service delivery and life in all categories

**Technology change**

Approximately equal in impact to policy change except for fit-out where it was relatively more important

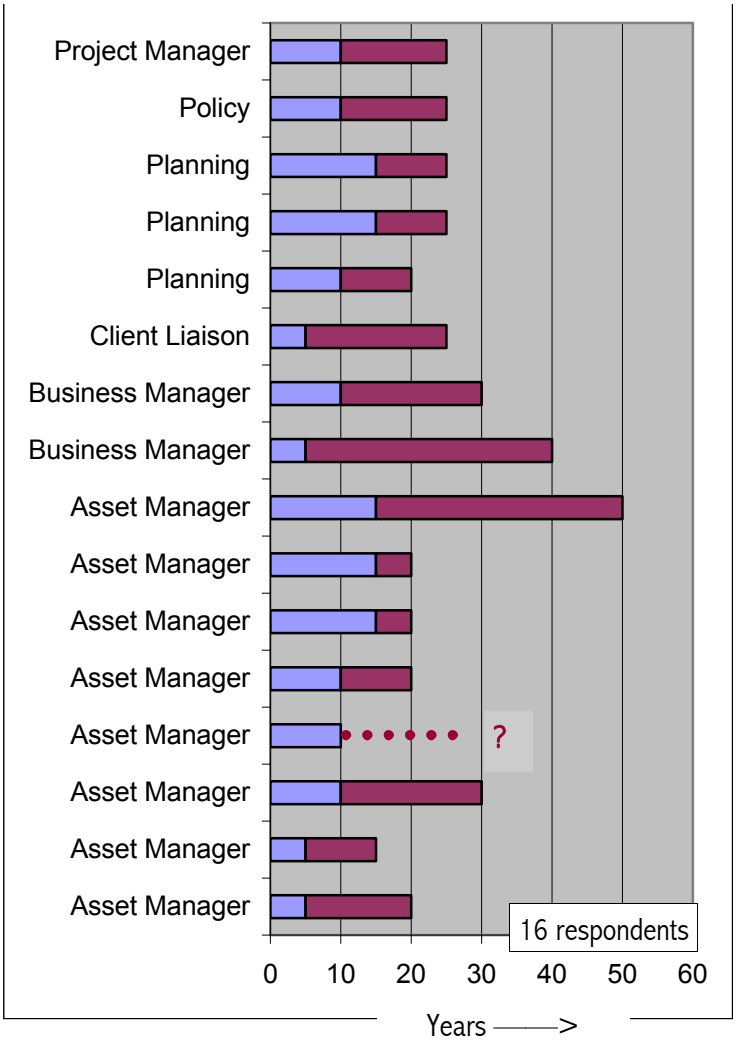
**Physical condition**

Important for services but least so for building structure and also for fit-out

# Fit-Out

The Interface Between the User and the Asset

**Hospitals—Fit-Out**




**How Long Does Fit-Out Last before becoming Obsolete?**

Fit-out is generally considered to have a much shorter life than any of the other building components. Building Structure has the longest. Compare the graph on page 609 with this one.

Remember the light shaded bar indicates the period for which service delivery is not expected to be impacted by age. The dark bar indicates the start of the impact and the age at which fit-out is considered to be functionally obsolete.

**Functional obsolescence** was considered to set in at between **20-40 years** (if we exclude our two outliers).

And while some thought that age started to impact on service delivery as early as 5 years into the life of fit-out, most thought that it would go 10 years or more before impacts were felt.

**Asset Managers v Non-Asset Managers**
**Two Observations**

**1.** Asset managers as a group are more variable in their assessment than non-asset-managers.

**2.** In general, non-asset managers were looking at longer lives before fit-out became functionally obsolete, in both hospitals and aged residential buildings. The differences are very pronounced with the respondent on behalf of service delivery itself suggesting the longest life of all.

What implications do **you** draw from this?

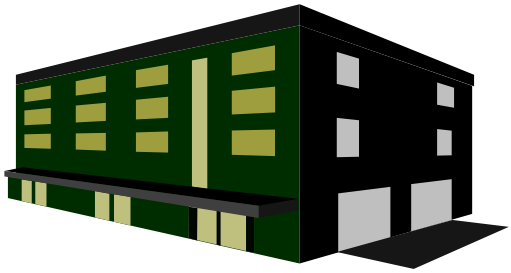
## Are Multi-Story Buildings Designed to be More Durable?

*—And more flexible?*

**Do tall buildings last longer?**
**Or are they just more obsolete?**

Studies carried out in Victoria show that high density hospitals are relatively older than medium or low density hospital buildings. Most of the high density buildings are in the older established inner metropolitan area.

Are these high density hospital buildings relatively more obsolete than lower density buildings—or are they designed differently making them more durable, and perhaps more flexible?



Survey respondents were asked to rate the expected life of buildings according to density.

**Non-Asset Managers** generally saw no difference in life expectations between single story, medium density or high density buildings.

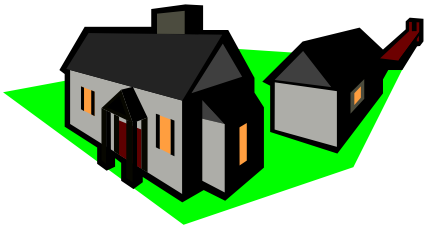
**Asset managers,** however, saw longevity increasing as the building height rose!

The impact was mostly on the structural element of buildings where high density buildings were considered to last up to 20 years longer before becoming functionally obsolete.

Some saw the site services and building services for high density buildings also as lasting rather longer, although most did not.

The life of fit-out was not considered to be dependent on the type of building it was in.

**What is your view? Are high density structures more durable? Importantly, are they designed to be more flexible? Should they be?**



## Does the Job that the Asset has to do affect longevity?

Less than half of the respondents felt able to comment on the impact of age on service delivery for fit-out when looking at different functions but of those that did respond the following general views emerged:

**General Wards** were generally considered to last longer before becoming functionally obsolete
and
**Clinical, Day Treatment and Education/Research** were generally considered to have shorter functional lives.

# Factors influencing hospital functional lives

What are the factors affecting the future functionality of your assets?

"Life is primarily a function of the initial design, particularly emphasis on quality, reliability, redundancy, expansion and flexibility for other uses. "

"*Life can be extended by adequately funded infrastructure upgrades and plant and equipment "*

"Shifts in the reasons for acute bed demand (eg the growing ageing population) also place emphasis on the need for different types of beds to be available (eg transitional and convelescent care)."

**"With regard to medical and other technologies, today's research is practice in 5 years.The practice then develops for some years in often unsuitable facilities until there is an understanding of what would work best. Hence about a 10 year horizon"**

"The aging population issue is current and expanding over the next ten ears. Whether this is a facility issue or a funding issue is the debate. If the transition from acute to aged care remains a state responsibility, then the nature of hospitals will have to change over the next 5 to 10 years."

**"Increasing morbidity within the patient cohort will see resultant increases in the number of immuno-compromised patients."**

"Life is primarily a function of the initial design, particularly emphasis on quality, reliability, redundancy, expansion and flexibility for other uses."

**"The trend to procure hospitals through private funding/design construct and like methods is producing facilities which are less flexible and adaptable than more traditional "**

"Medical technology— We are at the dawn of major advances in biotech. and also delivery options such as nanotechnology, robotics and artificial intelligence. The prospect that some procedures will be able to be delivered without direct human intervention will have a dramatic impact on how and where procedures occur."

*"The following will likely impact faciliites depending on how the problems are resolved:*

- *Aging of the population with increasingly acute illnesses and scarcity of trained staff to treat them.*
- *Environmental sustainability and management of noxious wastes"*

"The marginal cost between a flexible and adaptable hospital building and one that is pared down to the minimum possible capital cost is very little, and irrelevant in comparison with the enhanced service delivery and longer life of a well designed and engineered facility "

# Implications
# Or
# Where to, now?

**These are the 4 Questions that struck me as important**

**What are the answers?**
**Are they the right questions?**

(1) **There is extreme variability between the views of most respondents on the same assets. Why?**

(2) **Physical condition is considered to have the least impact on serviceability—and yet it is the one thing that we always measure!** Yet functional change- or 'fitness for purpose'- which is considered to be far more important we hardly measure at all, and when we do it, it is often limited to compliance issues. **We now have the technology to do so much more in assessing functionality, so why aren't we?**

(3) Overall, **non-asset managers rated the functional lives of assets as longer than asset managers did. Are they right?** Are they perhaps focussing on different issues? Are these issues more relevant? How would we find out?

(4) Given the relative importance of functional change and physical condition in affecting asset lives, **is flexbility now more important than durability**? What constitutes cost-effective flexibility? Should this be our focus for the future?

**All correspondence replied to!**
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