

Whole Life Costing

Whole life costing is not new, but it is becoming much more important as long-term building owners start to demand evidence of what their costs of ownership will be and PFI consortia try to assess the financial risks of taking on long-term responsibility for building operation and maintenance. This Fact Sheet gives owners, consultants, constructors and advisors a brief introduction to whole life costing, and some of its advantages and pitfalls.

WHAT IS WHOLE LIFE COSTING?

There are a number of definitions for whole life (or life cycle) costing, but the one currently adopted is:

'the systematic consideration of all relevant costs and revenues associated with the acquisition and ownership of an asset.'

All the costs associated with various options for a project are added together to represent a total cost. Future costs are discounted to a present day value.

Essentially, whole life costing is a means of comparing options and their associated cost and income streams over a period of time. An alternative definition, from BS 3811 on maintenance management, stresses that it is *'for the purpose of making decisions'*. Because the decisions involve considering events in the future as diverse as inflation rates, how long the building will be needed and what the weather will be like, there is a lot of uncertainty in the results. However, it does provide a method of choosing between alternatives on the basis of what we know now and what we expect the future will bring.

WHO USES WHOLE LIFE COSTING?

Whole life cost procurement in construction has been strongly advocated by long-term building owners and clients in recent years. These include the Construction Clients Forum in their 'Building Improvement' manifesto, and by the major clients of the Construction Round Table in their 'Agenda for Change' statement of procurement policies. Clients who own and manage buildings long term want to know their cost of ownership before being committed to a particular building or design alternative. *'Avoidance of unpleasant surprises is everything'* CCF.

Various contractual procurement initiatives which shift long-term costs of running built assets from the public to the private sector (e.g. PFI / Public Private Partnerships / Design, Build, Finance, Operate arrangements etc.) are driving the adoption of whole life costing by constructors and designers. A recent survey undertaken by BRE for DETR indicates that whole life costing is currently used extensively only on PFI projects and public procurement projects and is most frequently undertaken during the early stages of procurement.

WHAT IS IT USED FOR?

Whole life costing provides a *'rationale for choice in circumstances where there are alternative means of achieving a given object, and where those alternatives differ not only in their initial costs, but also in their subsequent operational costs'*

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It is particularly used to:

- determine whether a higher initial cost is justified by reductions in future costs (for new build or when considering alternatives to 'like for like' replacement)
- identify whether a proposed change is cost-effective against the 'do nothing' alternative, which typically has no initial investment cost, but higher future costs.

Measurement is assessed by considering:

- the benefit to cost ratio (eg to maximise net benefits/profits – *is upgrading an office building justified by enhanced leasing income?*)
- the savings to investment ratio eg minimising labour costs by investment in equipment – *choosing between installing fencing or employing security guards.*

WHICH COSTS ARE CONSIDERED?

Costs to be taken into account include initial capital or procurement costs, opportunity costs and future costs. Only options which meet the performance requirements for the built asset should be considered – those with lower costs over the period will be preferred.

- Initial costs include design, construction and installation, purchase or leasing, fees and charges.
- Future costs include all operating costs, such as rent, rates, cleaning, inspection, maintenance, repair, replacements or renewals, energy and utilities, dismantling, disposal, security and management all over the life of the built asset. Loss of revenue may also need to be taken into account – reflecting the non-availability of the revenue-generating building during maintenance work, for example.

The timing of future costs must be taken into account in the comparison of options. Future cost flows are discounted by a rate that relates present and future money values – which may include an allowance for inflationary changes.

Opportunity costs represent the cost of not having the money available for alternative investments (which would earn money) or the interest payable on loans to finance work.

WHAT ARE THE BIG ISSUES?

There are several important elements to whole life costing calculations and if they are incorrectly assessed, the results will be misleading.

Discount rates and inflation

The discount rate is used to calculate the present value of a future income stream or cost. That is the sum of money to be invested today in order to accumulate to amounts by the time they are needed. It is set by the client and includes the degree of risk on return required in a commercial context, or the rate of interest payable where loans are required to finance the construction work. If it is set too high, future costs will appear insignificant and will be favoured by the calculation. If it is set too low, higher

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capital costs will be discouraged, but high operational costs may result. If inflation is taken into account in the discount rate and if rates are substantially different in practice, the calculation may lead to inappropriate choices.

Building/component life

The periods during which the building or a component is assessed are important variables. The building life chosen makes a significant difference because certain major components, such as roof coverings, require replacement at varying intervals. An increase of just five years in building life may mean that a major unplanned expenditure is incurred, or conversely, if the building is required for a shorter period than planned, high cost, low maintenance options may not prove cost-effective. Data on the future performance of components are not always readily available and often depend on estimates based on accelerated tests. Where a long service life is essential, it may pay to be cautious and select tried and trusted options. Innovative solutions may however offer good value for money, if the assumptions made are borne out in practice.

Different organisations will have different expectations of building life and consultants should always check whether the client has a limited foreseeable use for the building. Not all clients want or need their buildings to last 60 or 100 years. At the end of a relatively short building life, the residual value and/or demolition costs may be significant factors. A sensitivity analysis can be undertaken to test the impact of different building lives and discount rates.

Allowances for tax

The tax regime within which the building owner is operating may determine which future costs are allowable for tax – for example capital allowances are currently available on new industrial buildings, hotels, industrial and commercial buildings in Enterprise Zones, agricultural buildings and on small workshops. Many items of plant, equipment, leased plant and, sometimes, associated builders' work are eligible for allowances. These allowances also vary depending on the financial situation of the building owner – whether or not there is a taxable profit against which allowances can be claimed.

For major projects, specific guidance should be sought on the assumptions made in the calculation and the rules that currently apply.

Obsolescence

A building or a component may be functional and yet may be obsolete, inefficient or no longer wanted. It is notoriously difficult to assess when or how obsolescence will strike. Changing land values on which the building stands, changing information technology cabling requirements and changing safety requirements have all contributed to render certain buildings obsolete. Whole life costing calculations should assume limited lives for building services equipment due to the current rapid technological progress.

FOR MORE DETAILED GUIDANCE

Contact

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