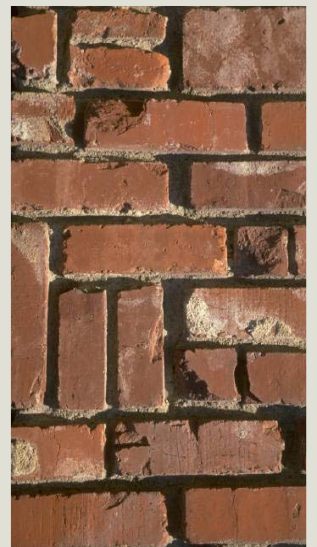


# Whole Life Appraisal



***FPS***

Federation of Property Societies

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## Introduction

Frank Lloyd Wright once said, “A doctor can bury his mistakes but an architect can only advise his client to plant vines.” Whilst he was referring to building aesthetics, there are many other design issues that, if ill conceived will result in regrettable consequences over the long term for either cost or ‘quality’ of its intended use.

For many years the image of construction within the public sector has been one of driving down initial capital cost, whilst longer-term maintenance or energy costs have been worthy of just a passing glance at most. More recently however this image is beginning to change. With the advent of the national Constructing Excellence initiative, the increasing momentum of Asset Management within Local Government and the developing interest in more sophisticated procurement; the longer-term consequences of the buildings we design are getting more consideration. In particular the introduction of the ‘Prudential Funding’ regime ensures that decisions based on a longer-term vision are not only feasible, but also essential, and should always form a fundamental component of any option appraisal approach.

## Purpose of Document

This document is not intended to be a detailed guide to Whole Life Appraisal, rather an introduction to some of the principles, techniques and sources of further information available. Authorities are encouraged to circulate it widely to raise awareness of the importance of a whole life approach in modern day local

## What is Whole Life Appraisal?

Whole life appraisal (WLA) is the systematic assessment of all relevant expenses, income and performance associated with the acquisition, procurement, ownership and potential disposal of an asset over its life. Recent studies have estimated that whole life building costs are considerably greater than the initial cost. These studies estimate that for a 30-year period operational costs for a building are 5 – 10 times as much as the capital cost.

However any long-term appraisal should not be exclusive to costs alone. To truly evaluate a building over its life we should balance the cost against an analysis of building functionality and performance characteristics. It is only then that decision makers will be able to evaluate the real consequences of differing initial scheme options over the full life of a facility. It is often worth investing more initially to save money and improve building performance in the longer term.

## Who should be involved in WLA?

WLA is not just for Building Professionals, everybody involved in commissioning, developing or managing a building should have an input into balancing initial capital cost against its long-term implications. Clients, facility managers and front line staff will often have the best ‘hands-on’ experience of how a building can contribute to service delivery over its life. It is essential that robust consultation and communication be undertaken throughout the development process to ensure that all parties are aware and can contribute to the ‘in-use’ service environment.

## Whole Life Appraisal and Best Value

The National Procurement Strategy published October 2003 states: -

*“In the context of a procurement process, obtaining ‘best value for money’ means choosing the bid that offers ‘the optimum combination of whole life costs and benefits to meet the customer’s requirement’. This is not the lowest initial price option and requires assessing the ongoing revenue/resource costs as well as initial capital investment. The council’s requirement can include social, environmental and other strategic objectives and is defined at the earliest stages of the procurement cycle. The criterion of best value for money is used at the award stage to select the bid that best meets the requirement.”*

Any decision therefore must be directed by a Best Value consideration. With increasing pressure on budgets lowest price will often be attractive in the short run, but will not necessarily deliver the best building over its lifetime. WLA can provide increased service life and service performance for a lower whole life cost whilst a higher initial investment may even provide greater longer term benefits with significantly reduced maintenance and operating costs.



*Spending more now  
may provide Best  
Value in the long run.*

### Is WLA realistic when it is difficult to accurately predict future costs and service quality?

No one is able to predict the future and WLA does not guarantee accurate forecasting. All calculations will include estimates and an element of speculation. Having said this it is much better to plan for the future based on the best information available. Even if the information used is not totally accurate as John Maynard Keynes points out “it is better to be almost right than precisely wrong”.

### What are the Benefits of Whole Life Appraisal?

WLA can provide many benefits for commissioning clients, building managers and users they include:

- Encouraging analysis of service/operational needs and helps to communicate these to the project team and other key stakeholders
- Balancing and optimising the life time costs associated with occupation and ownership against the initial capital cost.
- Potentially reducing revenue expenditure, by consideration of longer term projects cost consequence
- Balancing service and other qualitative benefits against initial and longer-term costs.
- Ensuring sufficient regard is given to short and longer-term risk, identifying potential for loss of performance due to building failure and/or the detrimental affects of inadequate maintenance.
- Helping to promote realistic and sensible budgeting for service delivery, energy consumption, repair and maintenance.
- Promoting greater appreciation of a building’s impact on the environment and how initial action can help to minimise this.
- Encouraging discussion with all key stakeholders and recording of decisions for future reference and learning.
- Providing data on actual performance and operation compared with that which was initially predicted
- Feeding back lessons learnt into design processes for the future.

## When should you carry out Whole Life Appraisal?



WLA should be incorporated into any option appraisal process and should be totally integrated from initial feasibility design right through to occupancy. As a project develops options should be developed and assessed using WLA to ensure the best decision is made at each stage. It will also mean that early planning must be undertaken to identify the key outcomes, both in cost and performance that a project will be measured against to ensure that these are all considered in the whole life context.

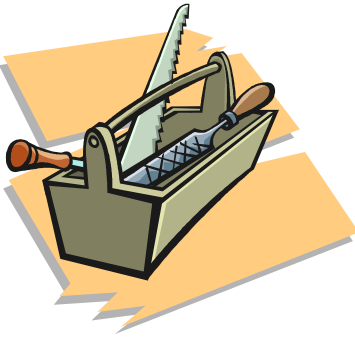
## What are the basic steps in Whole Life Appraisal?

1. Identify the key strategic and outcome targets for the project, both for initial construction and over the facility's whole life.
2. Identify initial capital costs and projected operational costs and incomes.
3. Evaluate potential scheme variables based on an analysis of associated short and long term costs weighed against service and other qualitative benefits.
4. Use a 'discounted cash flow' approach to bring any costs down to a common basis for comparison.
5. Undertake a 'sensitivity' analysis of the key variables to predict best and worst case scenarios.
6. Involve key stakeholders in the decision making process enabling all options to be considered both at cost and operational levels.
7. Prioritise all factors based on scheme requirements and score qualitative components if feasible
8. Balance cost and qualitative components and agree a scheme design based on optimum short and long-term considerations.
9. Continue to evaluate scheme as it develops through the design and construction process ensuring that any decision will be made in regard to its Whole Life consequences.
10. Carry out Post Project/Occupancy appraisals and measure key performance targets over the life of the building to demonstrate whether the facility has achieved its outline objectives. Feed relevant results back to designers to ensure that lessons are learnt and improvements can be built into future schemes.

### Whole life appraisal and the Prudential Code

The Prudential Code for Capital Finance was introduced in April 2004 and has been described as "the most significant and positive change in local authority finance for decades." The Code provides authorities with the freedom to undertake capital investment, providing that their plans are, "affordable, prudent, sustainable and based on sound treasury management strategy." So an authority can borrow money, if it can afford the longer-term consequences of such a decision. In other words, Whole Life Appraisal!

More details on the Code can be obtained from [www.cipfa.org.uk](http://www.cipfa.org.uk)



## Tools and Techniques

This is not intended to be a detailed guide of how to carry out a WLA, more a look at some of the key techniques and tools available, where and how they can fit into a WLA process.



### Capital Prioritisation

is a term used for strategic or high-level option appraisal whereby an authority chooses where to spend its money based on corporate aims and objectives. A decision for example could choose to allocate funding (that is not already ring fenced) to an education scheme that would improve Educational Standards based on corporate need and priority. More detailed option appraisal would then be carried out on the form the actual scheme would take. Although it would be impractical to carry out detailed WLA at this stage authorities should pay some regard to the longer term consequences any capital decision.

Example of Capital Prioritisation systems are obtainable from [www.ipf.property.net](http://www.ipf.property.net)

**Option Appraisal** has simply been defined as the “The appraisal of various options chosen to achieve specific objectives” In practice this probably does not do justice to the significance that robust option appraisal holds in the WLA process. Option Appraisal is probably more of a collective term than a distinct or individual process and it may utilise a number of the other tools or techniques contained within this section.

Option appraisal will need to be carried out at various stages during a project’s own life cycle although the impact or scope is likely to reduce significantly as the project develops.

- At initial feasibility stage for example an option appraisal may be carried out between different building types, sites, procurement processes, etc.
- At design stage building type, site alternatives and procurement route will probably be decided but option appraisal could be carried out differing materials, heating and ventilation alternatives and the like.
- At construction stage day to day variations may require option appraisal decisions on a much smaller scale.

Generally the processes of option appraisal would include:

1. Identification and prioritisation of the key success factors for a scheme both in the short and longer term.
2. Identification of the potential options
3. Evaluation of the relative costs and qualitative benefits of each option, judged against the key success factors using weighting and scoring if feasible.
4. Comparison of future and current costs using discounting to produce a comparable present day value.
5. Adjustment of each option based on risk and sensitivity analysis and consideration of the impact if key variables change.
6. Production of a ‘do nothing’ or ‘base option’ so that outputs can be compared against a baseline scenario.

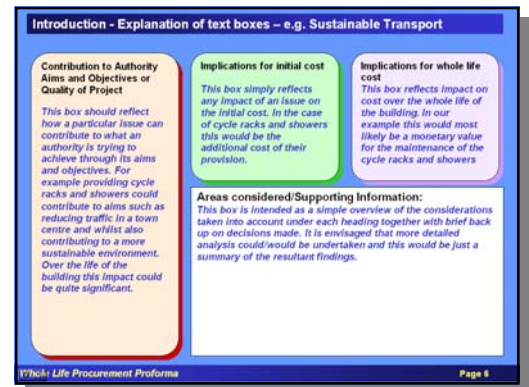
A detailed guide to option appraisal can be found within the Treasury Green Book at <http://greenbook.treasury.gov.uk>

## Tools and Techniques (Continued)

### Strategic Whole Life Procurement Proforma

At a strategic level FPS have combined with the Institute of Public Finance (IPF) to produce a Whole Life Procurement Proforma to assist Local Authorities and other organisations to take account of whole life issues when appraising construction schemes.

The model can be downloaded free of charge from the FPS Website [www.fedps.org.uk](http://www.fedps.org.uk), the National Best Value Benchmarking Scheme Website [www.nbvbs.co.uk](http://www.nbvbs.co.uk) and IPF's Asset Management Network Website [www.ipfproperty.net](http://www.ipfproperty.net).



The proforma provides a simple basis for raising awareness, communicating and discussing Whole Life Issues. Subject headings include energy use, repair maintenance and redecoration considerations and minimising environmental impact. Example notes accompany each subject area and, whilst not intended to be comprehensive they may spark some issues for debate. The proforma has been designed to be understood by all stakeholders involved in modern construction procurement within the public sector including service users, service managers, accountants, auditors and elected members. As such it is felt that it could make a significant impact in raising the profile of whole life issues when evaluating any proposed project during the design stage.

### SCQS Framework for Whole Life Costing

In 1984 the SCQS (Society of Chief Quantity Surveyors) published its guide to Life Cycle Cost Planning designed to give practitioners an insight into the use of Life Cycle Costing as a tool for option appraisal, project evaluation and strategic property investment. Whilst the ethos and content is still valid today the SCQS have decided the time is right to redraft and develop this document to meet the current needs of the Public Sector.

The Framework for Whole Life Costing is designed to explain the basic concepts of whole life costing and provide a software programme to assist with the compilation of the financial projections. The software programme is designed primarily to be “user friendly”, to prompt the user and guide them through the process of considering all aspects necessary to produce a comprehensive whole life cost report for any project or option appraisal exercise. The programme introduces a consistency of approach and indicates areas where particular aspects of the analysis should be recorded so that the information can be presented in a way that allows all projects or option appraisals to be assessed on a “like for like” basis.

The framework is considered to be the first part of a holistic approach to whole life costing in the Public Sector. The module is designed to allow the preparation of reports using a consistent approach to allow the sharing of information on similar projects. Thus enabling the industry to develop more realistic costing modelling techniques and ultimately assist the Public Sector to make more informed decisions on strategic property investments.

Further information is available at [http://www.scqs.org.uk/scqs\\_publications.htm](http://www.scqs.org.uk/scqs_publications.htm)

## Tools and Techniques (Continued)

### The Gateway Review Process

Was developed by the Office of Government Commerce (OGC) and launched in England in February 2001. The process is used to review a procurement project at key stages and a team of independent practitioners carries out each review. There are potentially six Gateway Reviews during the lifecycle of a project, four before contract award and two looking at service implementation and confirmation of operational standards.

A project is reviewed using the Gateway Review workbook appropriate to the point reached in its lifecycle. The purpose of a Gateway review is to provide assurance to the procuring organisation that the programme/project has had all necessary requirements completed to enable it to progress successfully to the next stage. The exact format of a Gateway can be adjusted dependent on the needs/requirements of the procuring organisation and complexity of a procurement process and WLA should be introduced as a specific consideration at each stage.

Further information is available at [www.4ps.gov.uk](http://www.4ps.gov.uk).

### Design Quality Indicators (DQIs)

Were first launched in July 2002. They are a unique method of assessing the quality of buildings and can be used by anybody involved in the production of the built environment. The DQIs are intended to measure the degree of 'excellence' of a facility in relation to its build quality, functionality and impact.

The DQIs are designed to be used at four stages in the process: from inception, through design, during construction and again when the building is in use, and allows clients to elicit and establish the brief and evaluate the extent to which their original requirements have been realised. The tool also allows for comparison between different respondents' results and for benchmarking between different projects.

The DQIs have been developed into an easy to use web tool, for everyone involved in the procurement of buildings. Results are produced graphically to facilitate discussion about whether project aspirations have been achieved. A number of the questions raised as part of the DQI online questionnaire relate to Whole Life Considerations and will help to promote a longer-term in-use view at design and construction stage.

Further information about the DQIs can be found at [www.dqi.org.uk](http://www.dqi.org.uk).

#### BS/ISO 15686 on Service Life Planning:

Available from the British Standards Institute

[www.bsi-global.com](http://www.bsi-global.com). A multi part standard on how to estimate service life of buildings and components. Part 1 is aimed at a general audience, Part 2 is more relevant to manufacturers and Part 3 is useful in checking whether service life issues have been taken into account.

#### Saving Energy Carbon Trust Starter Packs:

Available from [www.thecarbontrust.co.uk](http://www.thecarbontrust.co.uk). Information on Energy Use and Cost Effective Improvements for all building sectors including office accommodation, schools and residential housing.

## Tools and Techniques (Continued)

### BRE's Environmental Assessment Method (BREEAM)

BREEAM has been designed to assess the significant issue of environmental life performance of both new and existing buildings. It covers a wide range of environmental issues within one assessment, and presents the results in a format to be understood by all those involved in property procurement and management. The earlier BREEAM is used in the process the higher the possibility of achieving a high 'BREEAM rating' and improving environmental performance in the Whole Life of the asset.

BREEAM assesses the performance of buildings in the following areas: management, energy use, health and well-being, pollution, transport, land use, ecology, materials and water.

BREEAM also covers a range of building types including office, homes, industrial units, schools and retail units.

Further information is available at [www.breeam.org](http://www.breeam.org)



### Other resources

**The Federation of Property Societies Website** [www.fedps.org.uk](http://www.fedps.org.uk): Provides information on Whole Life Appraisal together with information on other areas of FPS work and activities.

**IPF's Property Website** [www.ipf.property.net](http://www.ipf.property.net): Provides an extensive resource of Construction and Property related material including guidance, presentations, practitioner documentation, an active discussion forum and information on forthcoming events.

**Office of Government Commerce Website** [www.ogc.gov.uk](http://www.ogc.gov.uk): A good resource for general construction information including an introduction to 'life cycle costing'.

**Whole Life Appraisal for Construction (Blackwell Publishing)**: Written by Roger Flanagan and Carol Jewell available from RICS Books Ltd [www.ricsbooks.com](http://www.ricsbooks.com). An excellent book that examines the benefits of a whole life approach in regard to cost and facility benefits.

**Whole Life Costing Fact Sheet**: produced by Constructing Excellence – Free to download from [www.Constructingexcellence.org.uk](http://www.Constructingexcellence.org.uk). Good simple and clear introduction to Whole Life Costing but does not examine service standards.

**20 Steps to encourage the Use of Whole Life Costing**: again produced by Constructing Excellence – Free to download from [www.Constructingexcellence.org.uk](http://www.Constructingexcellence.org.uk). This report is aimed at housing organisations but has general Whole Life Principles relevant to a wider market.

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