

# A GUIDE TO WHOLE LIFE COSTING (WLC)

## 1 Introduction

- 1.1 For many years the image of construction within the public sector was one of driving down initial capital cost, whilst longer-term maintenance or energy costs were worthy of just a passing glance at most.
- 1.2 This has all changed with the advent of the national Constructing Excellence initiative, the increasing momentum of Asset Management within local government and more sophisticated procurement arrangements. All of these emphasise that decisions based on a longer-term vision are not only feasible, but essential, and should always form a fundamental component of the option appraisal.
- 1.3 This was further underlined by the introduction of the Prudential Code for Capital Finance in April 2004, which provides Councils with the freedom to undertake capital investment, provided that their plans are *'affordable, prudent, sustainable and based on a sound treasury management strategy'*. This means that a Council can borrow money, if it can demonstrate that it can afford the longer-term consequences of such a decision, providing a clear link to both the concept and the practice of Whole Life Costing.
- 1.4 The National Procurement Strategy published in October 2003 made the link between whole life costing and best value, stating:  
*'In the context of the procurement process, obtaining 'best value for money' means choosing the bid that offers 'the optimum combination of whole life costs and quality (or fitness for purpose) to meet the customer's requirement'. This is not the initial price option and requires assessing the ongoing revenue/resource costs as well as the initial capital investment'*.
- 1.5 Any procurement decision must therefore 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 end product over its lifetime. WLC can provide increased service life and performance for a lower whole life cost, or demonstrate that a higher initial investment will provide greater longer-term benefits with significantly reduced maintenance and operating costs. In short, spending more now may provide Best Value in the long run.
- 1.6 This document explains the concept, principles and benefits of whole life costing and provides guidance on the basic steps in carrying out a whole life option appraisal. This guide should be referred to when undertaking projects using Lancaster City Council's Approach to Project Management (LAMP), which is the corporate standard for all Council projects<sup>1</sup>.
- 1.7 Following the LAMP method will help when considering whole life costing at relevant stages of the project and provide a co-ordinated and structured way of managing the project from beginning to end.

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<sup>1</sup> Detailed information on the LAMP method is available on the Intranet at *Finance/Project Management*. Please note that Council projects can only be managed by officers who have successfully completed the two day LAMP Fundamentals Training

## **2 What is Whole Life Costing and options appraisal?**

- 2.1 There are a number of definitions of whole life costing but one currently adopted is; '*The systematic consideration of all relevant costs and revenues associated with the acquisition and ownership of an asset*'.
- 2.2 Essentially, WLC is a means of comparing options and their associated cost and income streams over a period of time and is aimed at answering the question '*What is the long term cost of achieving the project objectives in this way*'.
- 2.3 Options appraisal has simply been defined as '*The appraisal of various options chosen to achieve specific objectives*', although this probably does not do justice to the significance that robust option appraisal holds in the WLC process.
- 2.4 Option appraisal may need to be carried out at various stages during the project – from consideration of the initial Project Mandate and approval of the Project Initiation Document (PID), to the evaluation of submitted tenders and during the delivery of the project.
- 2.5 The impact and scope of the options appraisal is likely to reduce significantly as the project develops under the LAMP methodology, for example:
  - At initial feasibility stage (if there is one) an option appraisal may be carried out between different building types, sites, procurement processes etc
  - During the *Initiating A Project* stage the building type, site alternatives and procurement route will have been decided but option appraisal could be carried out on alternative materials and heating and ventilation systems etc
  - During the *Project Delivery* stage, day to day variations may require option appraisal decisions, but will be on a much smaller scale.
- 2.6 Under the LAMP project management methodology, the Project Mandate is the starting point of any project identifying not only the objectives of the project but also the initial high level estimate of the potential capital and revenue cost for delivery of the end product.
- 2.7 Following approval of the Project Mandate the *Initiating a Project* stage can begin, the purpose of which is to establish an agreement in the form of a Project Initiation Document (PID). This document brings together all the key information needed to deliver the project on a sound basis.
- 2.8 By the time the PID has been approved by the Project Board, WLC will have helped to establish a much firmer idea of costs covering not only the costs of delivering the project but also the potential future costs once it has been handed over for operational use.

## **3 How will WLC help with options appraisal?**

- 3.1 As the project progresses options should be developed and assessed using whole life costing to ensure that the best decision is made at each stage. This means that early planning must be undertaken to identify key outcomes, both in cost and performance which the project will be measured against to ensure that these are considered in the whole life context.

- 3.2 In deciding on which option to select it is essential to consider all the costs involved in each option, including initial costs, opportunity costs and future costs, defined in the LAMP Methodology as the Product Life Cycle<sup>2</sup>:
- Initial costs include design, construction and installation, purchase or leasing, fees and charges
  - 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
  - Future costs include all operating costs, such as rent, rates, cleaning, inspection, maintenance, repair, replacements/renewals, energy and utilities use, dismantling, disposal, staff training, security and management over the life of the built asset
  - Loss of revenue may also need to be taken into account to reflect the non-availability of the revenue which would otherwise have been generated whilst the building is undergoing maintenance work, for example
- 3.3 Cost will not usually be the only criterion on which the different options will be evaluated. There will also be considerations of the quality of the product or the service provided. Sometimes there will be minimum quality standards to be met. In other cases, different solutions will offer different advantages, some of which will relate to quality and others to cost.
- 3.4 It is important to think in terms of meeting identified needs rather than in terms of acquiring particular assets (e.g. lease versus buy). When deciding how to meet a need the options considered should include all the practicable ways of meeting that need. An item which has ordinarily been used to achieve this may not actually be essential for meeting the objective.
- 3.5 Consideration may also need to be given to costs arising from impacts on the environment, such as clean up costs, or to comply with the Council's Sustainable Procurement Policy<sup>3</sup> or Government policy, such as that on paper and timber purchases.

#### **4 What are the basic steps in Whole Life Costing?**

- 4.1 There are ten basic steps to carrying out a whole life costing exercise (and options appraisal):
- Identify the key strategic and outcome targets for the project, both at the initiation stage of the project and over the facilities whole life
  - Identify initial capital costs and projected operational costs and incomes
  - Evaluate potential project variables based on an analysis of associated short and long-term costs weighed against service and other qualitative benefits
  - Undertake a risk and 'sensitivity' analysis of the key variables to predict best and worst case scenarios
  - Involve key stakeholders in the decision making process (and seek advice from other Council Services as required) enabling all options to be considered both on cost and on an operational level
  - Prioritise all factors based on project requirements and, if feasible, score qualitative components

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<sup>2</sup> The Product Life Cycle is 'The total life of a product from the time of the initial idea for the product until it is removed from service' e.g. where the asset concerned has either been disposed of, or the agreement for its use by the authority has terminated, and all material costs, associated with either the use of the asset or its disposal, have been accounted for.

<sup>3</sup> For more information contact the Council's Procurement Officer

- Balance cost and qualitative components and agree the project design based on optimum short and long-term considerations
  - Continue to evaluate the project as it develops through each project stage ensuring that any decision made takes account of its Whole Life consequences
  - Measure key performance targets over the life of the project to demonstrate whether the facility has achieved its outline objectives. Feed results back to ensure that lessons are learned and improvements can be built into future projects
- 4.2 At first glance, this might appear somewhat onerous and represent a further layer of requirement for information and evaluation, but as many of the principles of WLC are inherent to the application of the Prudential Code (see 1.3 above) a great deal of this is already contained within the LAMP methodology and within the Council's wider decision making and financial management frameworks.
- 4.3 The general criteria determining whether projects will fall within the scope of a WLC methodology is based on a combination of:
- timescales of the project (covering both initial construction/ implementation and operational life),
  - cost and;
  - operational factors
- 4.4 As a general rule you should consider the appropriateness of WLC for any Type 2 or Type 3 projects as defined in the LAMP Handbook under the section '*Determining the Project Size*', reproduced at Appendix A. Further work is currently underway to fully incorporate WLC within the Council's project management and other corporate frameworks (See § 5 below).

## 5 Summary

- 5.1 No one is able to predict the future and WLC does not guarantee accurate forecasting. All calculations will include estimates and an element of speculation. Having said that it is much better to plan for the future based on the best information available, even if the information used is not totally accurate.
- 5.2 WLC should form only one element in purchasing decisions, which should also reflect quality considerations and may reflect environmental and social consequences.
- 5.3 WLC aims to determine the full cost of a solution to a requirement over the full period that the requirement will exist. WLC should be seen as a means of costing different methods of achieving an objective. This means that a Project Mandate should be drawn up which clearly identifies what objective(s) is to be achieved before a decision is taken on how to achieve it.
- 5.4 WLC does not represent a new departure for the Council, but a combination of further refinements and a formalisation and recognition of work that is already taking place, which will provide the twin benefits of improving performance and demonstrating sound stewardship.

- 5.5 The steps being undertaken to bring this into practice include:
- Defining any additional information requirements and modifications needed to existing procedures. One specific example is formal arrangements for continuous monitoring after completion of the initial stages and feedback of lessons learnt into future practice.
  - Formalising inclusion of WLC within processes and methodologies, e.g. with specific references, headings, etc.
- 5.6 These relatively minor refinements, based on WLC principles, will bring benefits not only in terms of further improvements to performance, but also in demonstrating a thorough ongoing approach to a key aspect of the Council's use of resources.

## Appendix A - Determining the Project Size

The approach to assessing a project is based on adding up scores against certain criteria within a template developed for this activity, which when completed gives a total score. This total score indicates which project type the project most closely relates to.

Project types can be determined by where the total score falls, for example:

- Type 1 Projects = score between 30 and 55
- Type 2 Projects = score between 56 and 100
- Type 3 Projects = score over 100

If the score is less than 30, it is not necessary to formally apply the project management methodology. **The proposed boundaries should not be applied rigidly and are for guidance only.**

It is essential that the project sizing is undertaken prior to final confirmation of the appointment of the *Project Executive* and *Project Manager*. This is done to ensure that the most appropriate personnel are put into the key roles of the project.

Integral to the success of any project is having the correct decision maker (*Project Executive*) and planner (*Project Manager*). Without an understanding of the size and complexity of the project there is a greater risk that the wrong personnel will be appointed to these key roles.

## Appendix 2 - Project Sizing Tool

Criteria	2	4	8	16	Score
<b>Cost</b> (What is the estimated overall cost of the project?)	<£10,000	£10,000 - £50,000	£50,000 -£ 500,000 or EU Services/Supplies Directive	>£500,000 or EU Works Directive applies	
<b>Contractual Complexity/ Risk</b> (What are the contractual issues to ensure compliance with Contract Procedure Rules and what is the anticipated level of risk)	May have a service level/framework agreement, but no formal contract / low risk	Single contract with known supplier or three quotes / medium risk	Competitive Tender required - but most likely to be known supplier / medium risk	Tendered contract with new unknown supplier / high risk	
<b>Timescale</b> (What is the estimated overall timescale of the project?)	<6 months	6 - 12 months	12 - 18 months	> 18 months	
<b>Strategic Targets</b> (How will the project contribute to, or help realise, corporate objectives/priorities?)	No links to strategic targets	Contributing to other work that is linked to a strategic target	Direct contribution to strategic target	Direct contribution to more than one strategic target	
<b>Impact on organisational change</b> (What will be the impact on staff and business both during and after the project?)	None/minimal	May require some new business processes & possibly some retraining	Significant restructure of process & work areas	Transfer of staff or out sourcing	
<b>External policy or legislation</b> (What are the links to external policy/legislation?)	No links to other work	Some link to other work that is delivering policy or legislation	Direct link to policy or legislation	Fundamental to achievement of policy or legislation	
<b>Stakeholders</b> (What is the extent of stakeholder engagement required?)	Internal & within single service area	Internal across more than one service area may involve an external partner	Internal and external	Mainly external	
<b>Track Record</b> (What is the experience of doing this type of project?)	Have done this many times before	Have done this once or twice	Have done similar before, but not the same	Have not done anything like this before	