

# Whole Life Costing Management Systems

## a tool used to make informed long term financial decisions

by  
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**D**uring the AMP3 regulatory period, Whole Life Costing (WLC) was not fully utilised by the industry. In those companies that did adopt its use, the technique was generally applied to individual projects rather than to the investment programme, with different formats and methodologies leading to inconsistencies. For most companies, procurement best practice now dictates that investment decisions must reflect best value for money in terms of the total cost of asset ownership. In addition, there is an increasing regulatory requirement to include sustainability objectives within the project solution process. In the lead up to PRO9, Ofwat expects companies to apply the Common Framework principles when forecasting expenditure for regulatory purposes. This framework provides a coherent way of estimating the future capital maintenance required to provide defined levels of service to customers and the environment in an economic manner. Ofwat has made it clear that companies should develop least-cost solutions in terms of capital and operating expenditure.

WLC is a tool which is used to make informed long term financial decisions. It is defined in the International Standard BS ISO 15686 Part V as the “economic assessment considering all agreed projected significant and relevant cost flows over a period of analysis expressed in monetary value. The projected costs are those needed to achieve defined levels of performance, including reliability, safety and availability.”

WLC should consider all relevant costs and income associated with the ownership of an asset. Such costs include the initial capital costs, operating costs, business implications (income, capital allowances and business rates) and disposal and any residual costs.

In order to compare different options, the financial profile of each solution must be discounted to calculate the Net Present Values (NPV). The NPV represents the value today of all the cost and revenues during the entire life cycle of the asset. The useful life of the assets and constituent components will also need to be considered. WLC can be applied to projects at any level, from the selection of engineering options to detailed component selection..

WLC is relevant to water and sewerage companies as they have a long term interest or ownership of the assets that they construct and manage. Informed decisions made in the early stages of a project will produce the greatest benefit. When applied to various project solutions during the optioneering stage, the WLC technique will provide a useful means of comparing the total cost of ownership.

An Asset Management Plan (AMP) consists of the creation, enhancement, maintenance and operation of assets to meet defined sets of regulatory and performance outputs.

Where investment is required on a group of assets, consideration must be given to the effects on long term demand. A short term view would be to design a solution to meet current demand in order to deliver a regulatory output. Unless future changes in demand are considered, the proposed solution may result in surplus capacity, sub-optimal performance or under-capacity, potentially resulting in service failure. An asset solution can be delivered to meet regulatory targets with minimum capital investment but with high operating costs, or vice versa. Regulatory outputs may be delivered through short term capex solutions, which may give rise to a need for increasing maintenance investment over the longer term. There is usually an optimal cost solution that balances the initial capital cost and the ongoing maintenance and operating cost.

WLC will ensure that asset life cycles are optimised whilst achieving desired performance targets, delivering regulatory outcomes, and will mitigate the risk of asset deterioration and failure. Other benefits include the alignment of engineering decisions with corporate and business objectives, achieving best value for money and an integrated design approach. WLC will ensure that environmental and sustainability issues are addressed. The energy consumption and power costs for various project solutions over the life of an asset are considered prior to option selection.

An integrated and standard WLC management system ensures that each individual project is not considered in isolation from the overall company regulatory requirement. This integrated approach requires an understanding of the whole regulatory output requirement which is to design, construct and maintain a group of assets or projects over their functional life spans. Such a strategy will need to be developed and adopted by all relevant parties including management teams, design and process teams and operating partners. It is critical that the end user or asset owner is seen to lead the process and is fully involved in its development and implementation.

From our experience we have identified two main barriers to the introduction of WLC.

The first is the desire to achieve short term objectives at the expense of long term costs. A key element of WLC is that a client should be prepared to consider higher initial capex costs for a benefit in longer term opex costs. It is evident that the current five year regulatory framework does not promote a WLC asset management approach. The second is the lack of sufficient and relevant data. WLC requires accurate assessments of future operating and maintenance costs, and expected lives of various assets. Such factors can vary widely depending on usage of the assets and the knowledge of the estimator. It is essential, therefore, to establish effective data capture systems and cost segregation procedures in order to identify actual opex costs. Such data can be used to derive opex cost models which can be used in future WLC assessments.

Dwr Cymru Welsh Water has recognised the importance of WLC within the context of long term asset management planning. ChandlerKBS assisted DCWW in the development of a standardised WLC tool which is used to evaluate investment options for AMP4. A group has been established with a brief to extend the use of WLC and to agree on the most suitable format, content and methodology.

## Water Treatment and Supply

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The group comprises representatives from across the business including contractors, design and process teams, cost consultants, operating partners and the end users, The standard methodology format was developed in accordance with BS ISO 15686. One of the first tasks was to determine the appropriate discount rates for different type of projects, namely regulatory, discretionary, income generating and efficiency projects, and the period over which to calculate the NPV. Whilst the methodology has been developed for use in option selection stages, it is intended that the principles will be applied to catchment wide and resource zone solutions. The tool will be applied to all major schemes or, where there is a significant change in operating costs. The procedure is now incorporated within the capital approval procedure.

With most companies stating that the AMP4 determination was extremely challenging in respect of capital allocation, the tendency still remains for companies to select the lowest capex solution. Without a consistent and robust approach to WLC, low capex solutions are likely to prevail, which will result in operating budgets being exceeded in the future. In the lead up to PRO9, Ofwat plans to attach more significance to adherence to the Common Framework principles. As such, companies will need to embed these principles into their day to day business. ■

**Note:** *Dylan Davies, is Associate and Richard Dowers, Regulation and Investment Manager, both with ChandlerKBS*

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