

**BRIEFING NOTE ON THE WHOLE LIFE COST APPROACH TO HIGHWAY MAINTENANCE**

**Adopting a Whole Life Approach**

Historically, maintenance decisions in Southwark were based upon short-term, subjective criterion. These typically ignored any future costs of operating and maintaining the asset. Furthermore, they also failed to optimise the timing of maintenance interventions to deliver maximum value.

Any money spent on highway maintenance should be treated as an investment and as such should be subject to a rigorous assessment process. In recent years a whole life cost approach has been adopted taking into consideration the maintenance requirements throughout the lifecycle of the asset to ensure long term value for money benefits.

**What is Whole Life Costing?**

Whole life costing involves the evaluation of treatment costs for a range of maintenance options over a consistent time period. This process allows the costs and any benefits to be estimated for each option assessed on a comparable basis. The option with the lowest cost to benefit provides the most advantageous investment.

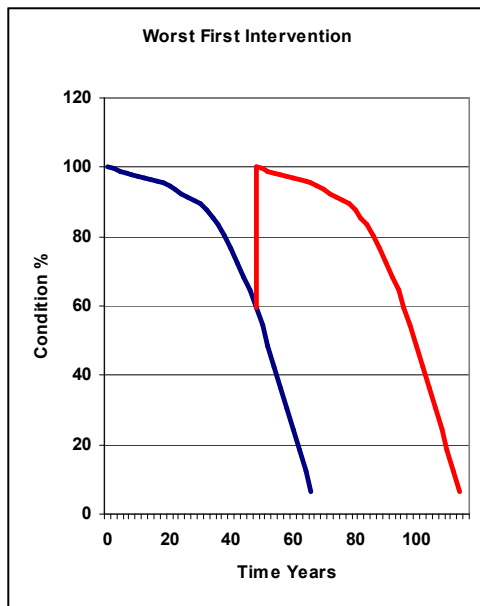
**How Does This Work In Practice?**

Assets, such as footways and roads deteriorate over time and various maintenance options can be undertaken to restore condition. The following are typical examples of footways condition, defects and remedial measures.

Condition	Typical Defects	Possible Action	Typical Cost	Potential Benefit in Years
Poor	Minor cracking of blacktop surface and minor loss of surface material. Cracking of paving slabs resulting in an uneven surface.	Patch Footway	£64/sq.m	40 years extension in life
Very Poor	Heavy cracking of blacktop surface and major loss of surface material. Cracking of paving slabs and minor displacement.	Resurface or re-slab footway	£46/sq.m	30years extension in life
Potentially Hazardous	Deep potholes and uneven blacktop surface. Heavily Displaced, rocking or missing paving slabs	Rebuild footway	£111/sq.m	50years extension in life

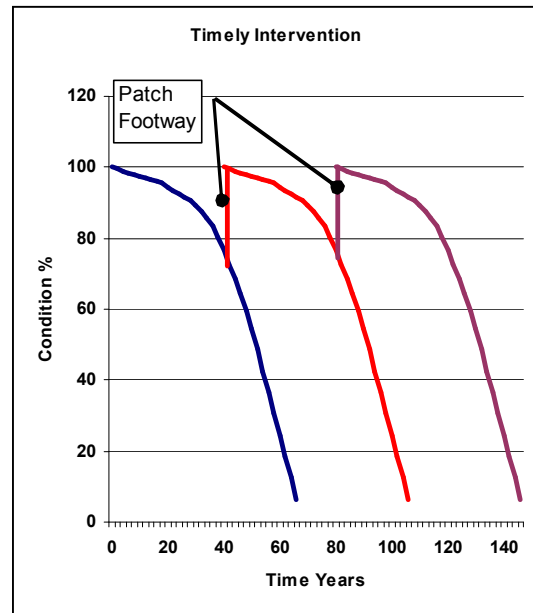
The whole life costing approach considers the cost of each maintenance option and the potential benefits of each option over the life of the asset.

The following example shows the comparative cost benefit of performing a 'Worst First Intervention' where a footway has to be rebuilt when compared with a 'Timely Intervention' where patching is undertaken. The 'Timely Intervention' has a cost benefit of a factor of 1.4 or a potential 40% more effective use of resources.



Footway deteriorates to an extremely poor condition and needs rebuilding at a cost of £111/sq.m to extend the life of asset by 50 years.

$$\text{Cost Benefit} = \frac{£111}{50\text{years}} = £2.22/\text{year}$$



Footway deteriorates to a poor condition and can be patched at a cost of £64/sq.m which will extend life by 40years, patching then repeated after 40 years to extend life by 80 years.

$$\text{Cost Benefit} = \frac{£128}{80\text{years}} = £1.60/\text{year}$$

Improved Cost Benefit by a factor of 1.4

### What is the Impact of the Whole Life Cost Approach?

An everyday analogy is with the maintenance of a house. The property owner will instinctively apply the principles of whole life costing when determining a decision on maintenance to their property by considering the funds they have available. Should their roof have a few tiles displaced or missing, then with limited funds they will patch the roof, as they will see no benefit in replacing the rest of the roof even if it looks in a poor condition but is still watertight. Similarly, if a window needs replacing then only this will be undertaken, while the rest of the windows will be left untouched as they are serviceable. Property owners with limited budgets only undertake the maintenance they can afford and see as having the most benefit.

On roads and footways the whole life cost approach inevitably leads to work being targeted towards only those areas that need to be treated, using the most cost effective method of treatment. In practice this leads to short sections of road and footway being patched or resurfaced as this is the most effective use of resources.