Urban Flooding

Feasibility of whole life costing of non-structural measures

FRMRC2 has produced:

- Literature review on the feasibility of calculating the "true overall cost" of a range of flood risk reduction measures
- User-friendly software tool providing a qualitative method to assess the feasibility of Whole Life Cycle Costing for non-structural responses.

Intended readership:

- Environment Agency
- Local authorities
- Researchers

Where to find more information:
http://www.floodrisk.org.uk/

Summary

The reliability of benefit-cost comparisons depends crucially on the accurate estimation of costs. A Whole Life Cycle Costing approach (WLCC) is recommended in flood risk management economic appraisals. However difficulties arise in its use for non-structural responses (NSRs) which are of growing importance. Also, given that the focus on NSRs is still recent, the expenditure on these approaches has not yet been fully considered, nor is it aggregated systematically.

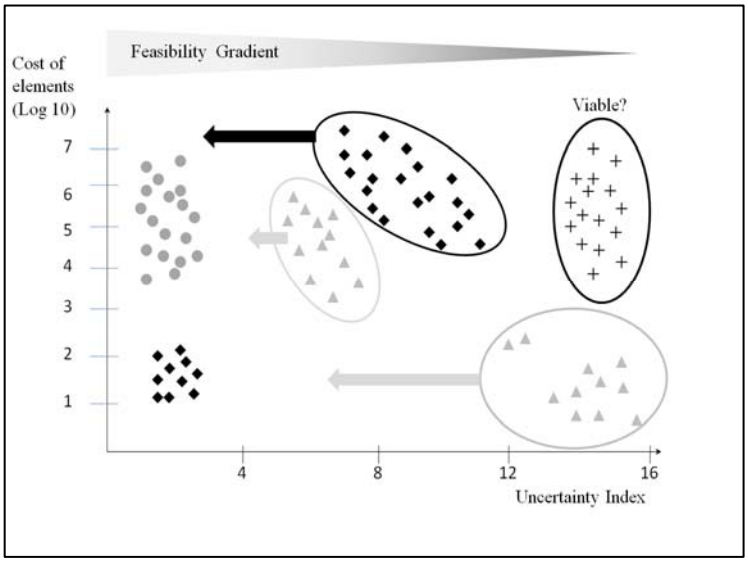

Figure 1: The concept as fully developed into a decision-support tool. For each considered element, an uncertainty index is calculated, based on the level of uncertainty (available knowledge on the costs) and the nature of the costs (behaviour of the costs) and mapped against element costs on a log_{10} scale .

This lack of knowledge is the main barrier to economic appraisal. Our tool was designed to assess the feasibility of undertaking a "whole life" approach to the costing of non-structural response. The method allows flood risk managers to assess if there is enough knowledge and data to support a robust, effective economic appraisal for an integrated urban flood risk management project.

The tool identifies those project elements for which more accurate costings will be important.

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A hierarchical Cost Breakdown Structure (CBS) is used to locate and to further identify sub-levels where uncertainty may rest.

This methodology has been converted into a tool named WLCC_UI (Figure 2).

An easy to use interface has been designed to support the use of this approach with decision makers.

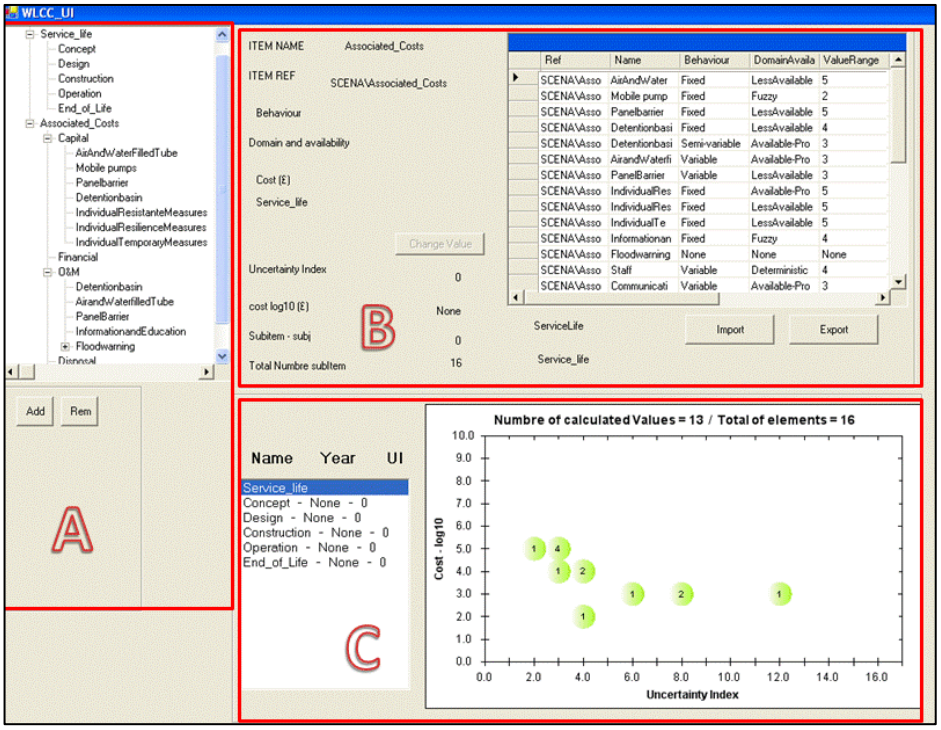

Figure 2: WLCC_UI user interface

***A**=CBS*
***B**=declared uncertainty*
***C**= plot as on Figure 1*

[1] Uncertainty being defined as *any departure from the unachievable ideal of complete determinism* [Walker W.E., Harremoes P., Rotmans J., Van Der Sluijs J.P, Van Asselt M.B.A., Janssen P. and Krayer Von Krauss M.P. (2003) Defining Uncertainty: a conceptual basis for uncertainty management in model-based decision support***.** ***Integrated Assessment*** 4(1): 5-17.]

Other sources of information

Viavattene C. and Faulkner H. (2009). An uncertainty index to measure the feasibility of whole life cycle costing approach in flood risk management. Cost Action C22 **Road Map Towards a Flood Resilient Urban Environment** Paris 26/27.11.2009

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- Northern Ireland Rivers Agency

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