

Board 9: Analysis of Flood Risk & Cost Benefit



What is Benefit-Cost Ratio?

Damage calculations consider the following:

- Residential receptor flood damages;
- Non-residential receptor (e.g. commercial/industrial) flood damages;
- Road closure impacts on local economy;
- Cost of residential evacuation;
- Damage to vehicles;
- Emergency services costs; and
- Impacts on health.

Benefit-cost ratio (BCR) looks at the *reduction* in damages due to a defence option (i.e. the benefit) divided by the estimated cost of the work.

This provides a ratio which, if greater than 1.00, shows an option is economically viable.

As there are many uncertainties, a factor known as an optimism bias is applied to the calculation. At optioneering stage, this was 60% (i.e. assume everything is 60% more expensive than calculated) – but at outline design stage this figure is only 40%, to account for the increase in certainty.

Costing Details

Cost Element	Estimated Cost
Direct Defences	£5,700,000
River Reprofiting	£260,000
A75 Reprofiting	£55,000
Secondary Flooding	£850,000
Utilities Diversions	£165,000
Landscaping	£25,000
Maintenance (50 Years)	£505,000
TOTAL	£7,560,000
Add 40% Optimism Bias	£10,584,000
Add 25% On-Costs	£13,230,000
Baseline Damages	Estimated Economic Benefit
Total (PV) Benefits	£13,725,000

Overall scheme benefit-cost ratio (BCR) = 1.04