

Key for comparison table

Cost

There are a number of costs to be considered when looking at the options. The appraisal process enables us to understand the costs and benefits over the full lifetime of the options, as well as the costs associated with long-term maintenance. For the purpose of comparison we have used the estimated whole life cash costs which includes the costs for design and construction of any changes to the scheme now and future operation and maintenance costs over a 100 year period. Within our cost estimates we include potential future costs, for example ongoing maintenance, replacement of gates as they reach the end of their working life and electrical equipment. For a more detailed breakdown of the costs please see the information sheets to the right of this page.

Flood Risk

One of our priorities is to maintain the standard of protection against flooding the scheme currently offers into the future (1:100 year or 1% annual probability), taking into account the impacts of climate change. All of the options maintain the current standard of protection.

For options that include the removal of sluice gates along the River Ember, there would be a reduction in flood risk compared to the present day situation in rare flood events (1:1000 year or 0.1% annual probability). The engineered river channel would continue to convey flows as it was designed to do and due to no water being impounded, the engineered channel would have greater capacity to accept increased flows.

Water Level

The options to update the scheme may impact the present day water level in the main channel. Some of the options lead to changes in the water level and depth of water within the river channels while other options will not result in any change. For further information on water levels please view the option presentations on the right of this page.

Whole Life Carbon

This is a measure of the impact of an option on the environment. This is achieved by calculating the carbon footprint, measured as metric tonnes of carbon dioxide (CO₂e), through the generation of capital and future carbon. Capital carbon includes carbon associated with the manufacture of components, transportation of materials to the river and construction activities on the river. Capital carbon does not include carbon associated with the final disposal of waste generated from the project. Future carbon includes carbon generated through operation and maintenance. For more information please see our [carbon factsheet](#).

Water Environment

This is subdivided into three key areas: **Fish Passage** describes how fish move up and downstream, as well as in and out of the river system. This is important to allow different species and life stages to utilise specific habitats, move away from disturbance events such as pollution and be able to subsequently recolonise affected areas. Some species (such as eels) need to migrate upstream and downstream to complete their life cycle. **Biodiversity** describes the variability or richness in flora and fauna i.e. the biological diversity. **Water Quality** describes the condition of the water in terms of its favourability for species to survive. This includes temperature, dissolved oxygen, fine sediment load as well as contaminants such as phosphates, nitrates and heavy metals.