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# Buckingham Flood Defence Improvements

## Presentation of the Preferred Option

November 2003



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The Environment Agency is the leading public body protecting and improving the environment in England and Wales.

It's our job to make sure that air, land and water are looked after by everyone in today's society, so that tomorrow's generations inherit a cleaner, healthier world.

Our work includes tackling flooding and pollution incidents, reducing industry's impacts on the environment, cleaning up rivers, coastal waters and contaminated land, and improving wildlife habitats.

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# Background

Following the widespread serious flooding that occurred during April 1998, the Environment Agency commissioned a feasibility study to consider improved flood defences in Buckingham. This document forms a progress report on this scheme.

Buckingham is situated approximately 15 km west of Milton Keynes, in the upper reaches of the river Great Ouse catchment. The present flood defence standard at Buckingham results in flooding to a small number of properties approximately once in every 5 years. However, there were approximately 70 properties affected by flooding during the April 1998 flood event. This has been assessed as a flood that has a probability of occurring only once in every 100 years.

The Environment Agency has permissive powers (contained within the Water Resources Act 1991) to manage the flood risk in Buckingham by providing flood defence improvements to the highest standard that can be shown to be technically, economically and environmentally viable.



Figure 1 Flood outline for April 1998 event

# Consultation

The Agency has undertaken an Environmental Impact Assessment, which involved formal consultation with organisations and individuals that have an interest in the area.

The environmental assessment is an integral part of the project appraisal process. It provides a systematic appraisal of the potential environmental effects of both the construction and operational phases of the proposed work.

Formal consultation has been undertaken in accordance with the requirements of the Agency's Environmental Impact Assessment Guidance. In 2001, an initial 'scoping' consultation took place to enable the various options to be fully identified. Later that year, a more detailed consultation with statutory consultees and affected landowners was undertaken to assess all of the options.

The Agency aims to protect the environment when carrying out any work, and seeks to incorporate environmental enhancements where possible. An Environmental Action Plan has been developed which sets out protection and enhancement actions that will be required before, during and after construction of the scheme. The construction programme will be developed to incorporate the identified actions.



Photo 1 Ford Street, January 2003

# The Preferred Option

Technical, environmental and economic factors have been fully investigated to identify and consider a range of options for flood defence improvements.

The preferred option, which was identified by the feasibility study, will defend people and property against a flood event that has a probability of occurring once in every 50 years. This will consist of:

## **A Flood Storage area at Water Stratford**

River flows will be regulated by a flood storage area and a flow control structure situated at Water Stratford, upstream of Buckingham. This will basically consist of an earth embankment dam, using the alignment of a disused railway embankment, to store flood waters on agricultural land within the flood plain. The flood waters can then be released in a controlled manner to manage downstream water levels. Under normal flow conditions the water will pass freely and the land within the storage area will be dry. When the river is in flood the embankment will hold back water that would otherwise cause flooding in Buckingham. This will create a temporary lake that will drain down as flood waters retreat.

The flood storage area will remain as private agricultural land and will continue to be farmed in much the same way as it is now. There is an ongoing process of landowner consultation and negotiation with regard to the scheme, and appropriate compensation will be paid for the use of the land for flood storage.

## **Flood Defence Improvement in Buckingham**

The highest risk of flooding in Buckingham is in Ford Street, due mainly to the presence of the Ford across the river. Even with the flood storage in place there will remain a high risk of flooding in Ford Street, and it is therefore necessary to construct defences there. Due to proposed development on an adjacent site the final design for this location is still being considered. It is anticipated that this will consist of flood walls across Ford Street on either side of the river, and this will necessitate permanently closing off the Ford to traffic.

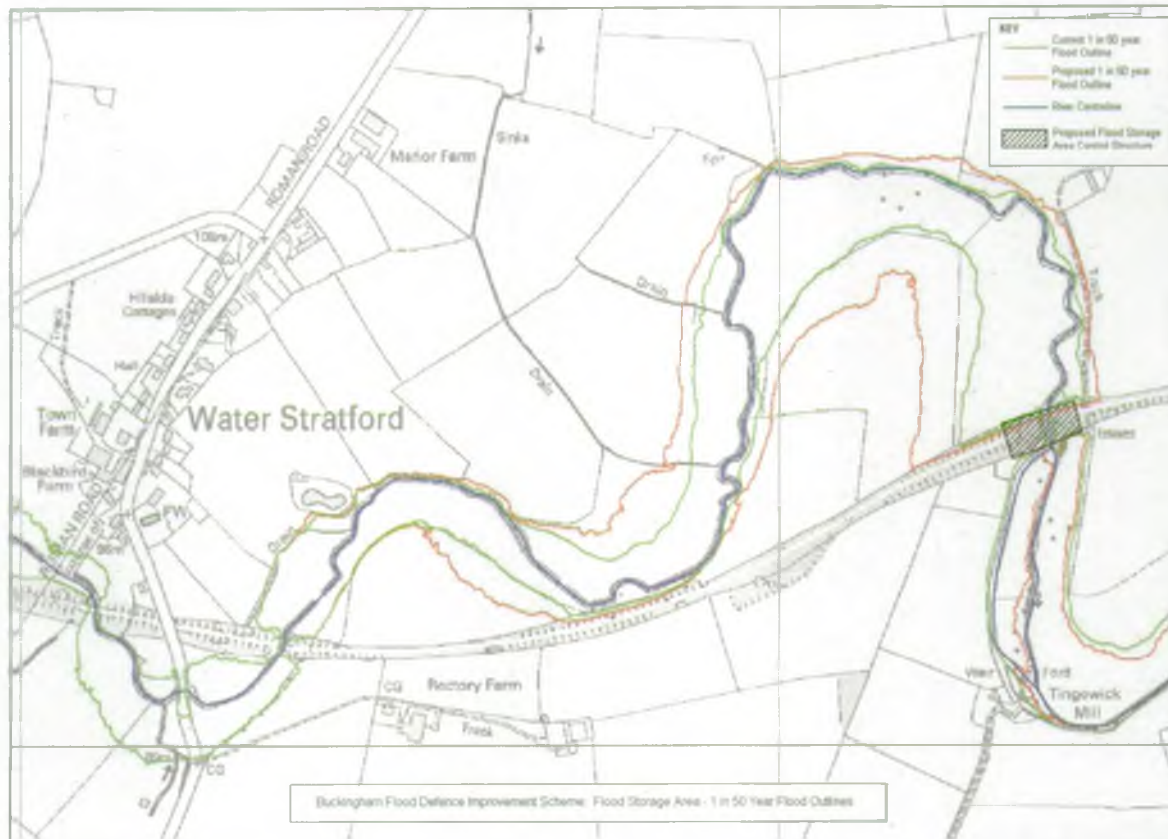


Figure 2 Flood outlines in storage area

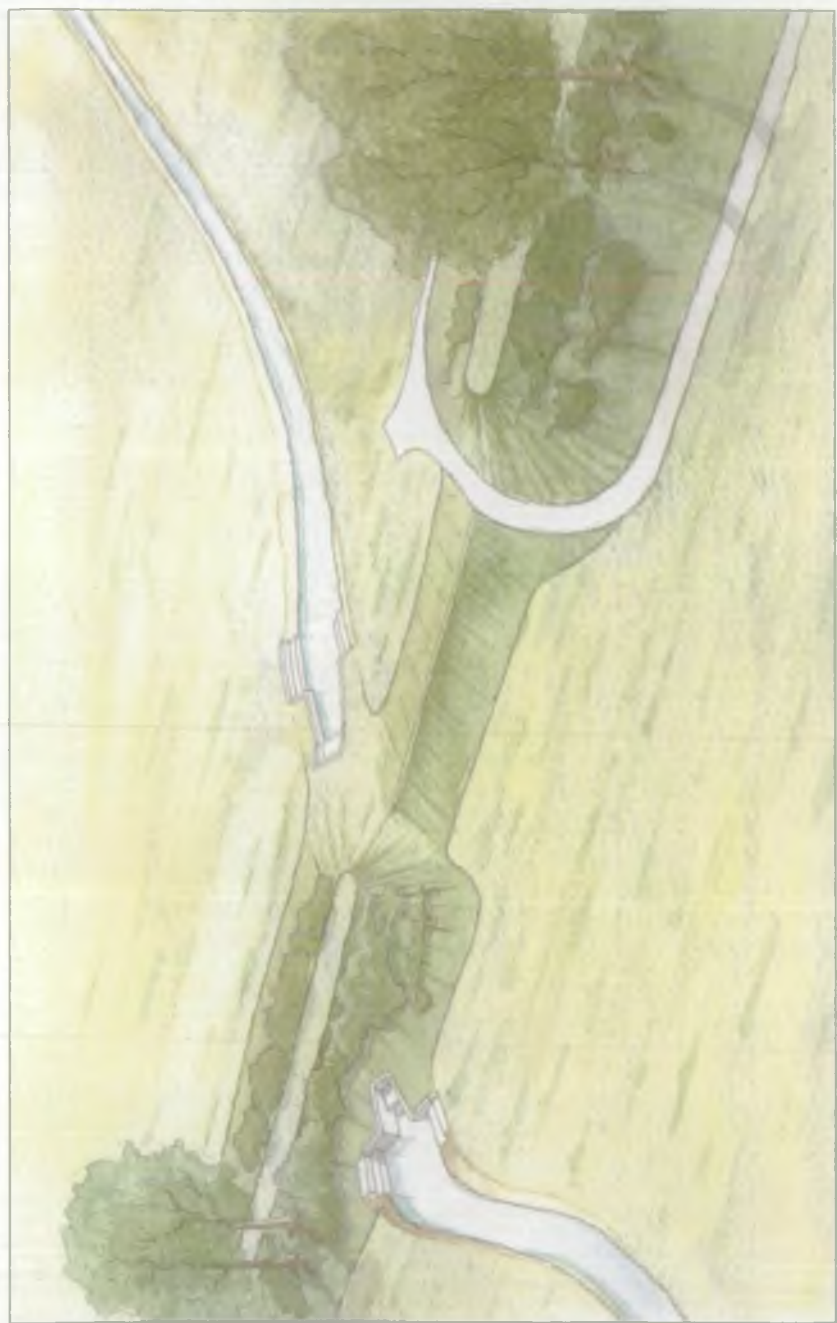


Photo 2 Artist's impression of flood storage embankment

# Alternative Options

The following options were also considered:

## **Do Nothing**

This would involve no improvement or maintenance and would lead to increased flood risk. This option is the baseline case against which all other options are compared.

## **Do Minimum**

This would involve maintaining the existing situation, and would therefore bring no improvement or reduction in flood risk.

## **Improve Flood Defences**

This would involve the construction of floodwalls along the riverside in Buckingham. However, the higher the standard of protection that is provided, the greater the length and height of these defences becomes. The feasibility study did identify that a higher standard of protection could be provided and would be economically viable. However, the associated risks and cost uncertainties were considered to be excessive. A working group involving Aylesbury Vale District Council, Buckinghamshire County Council, Buckingham Town Council and the Agency's Project Team, also concluded that the extensive flood defence walls required would have a significant visual impact on the riverside in the Buckingham conservation area, and would receive strong opposition.

## **Flood Storage**

This would involve the construction of a flood storage area and flow control structure at Water Stratford. The benefits of this solution are significant as it avoids the need for costly and unsightly defences in the town. However, a flood risk would remain to some properties due to the volume of flood storage being limited. Hence, this would not provide comprehensive flood protection against flooding.

## **Combination Scheme**

This would involve both flood storage and improved flood defences. This option offers the benefits of flood storage but addresses the problem areas that would have a residual flood risk by the addition of some flood walls in Buckingham. This option is the preferred solution.



# River Maintenance

The ultimate responsibility for river maintenance rests with the riparian owners. However, the Agency can and does undertake works to maintain and improve rivers.

The current maintenance regime for the River Great Ouse at Buckingham includes the following operations, which are undertaken where and when considered necessary:

- **Weed Cutting**
- **Dredging**
- **Clearance of Debris**
- **Floodgate Operation and Maintenance**

- **Future Maintenance Proposals**

This will need to include operation and maintenance of the flood storage structure at Water Stratford. The flood embankment and its associated flow control structure will need to comply with the requirements of the Reservoir Act 1975. It will be inspected and maintained on a regular basis to ensure safe and effective operation at all times.

# Programme

The following programme is subject to availability of funds and relevant approvals.

Stage in programme	Timescale
Pre-Feasibility Study	1999
Formal Consultation	2001
Feasibility Study and Environmental Assessment	2001
Funding Approval	January 2002
Detailed Survey and Ground Investigation	April 2002 – June 2002
Detailed Hydraulic Modelling	July 2002 – September 2002
Outline Design	October 2002 - December 2002
Landowner Negotiations	On-going
Planning Applications	November 2003 – March 2004
Application for grant aid from Defra	February 2004 – April 2004
Detailed Design	March 2004 – June 2004
Construction (in phases)	July 2004 – October 2005

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