What are the management challenges associated with the development of river landscapes?

Managing river landscapes is often about balancing socio-economic and environmental needs. This requires detailed planning and management.

Managing the Thames at Oxford

- Oxford is a small city and there is not much land available for development. However, there is great pressure for new residential and industrial developments (socio-economic need)
- This causes conflict and increases chance of flooding especially as some of this new development is taking place on floodplains.


Flood

Why is Oxford prone to flooding?

- Low lying
- Water from a large area (2500km^2) drains into two rivers (Thames & Cherwell) which have their confluence in Oxford
- R. Cherwell floods more often than it used to because trees and hedges are being cut down (to increase agricultural production)
- Area mainly clay which is fairly impermeable
- Floodplain development (residential)
- Bridges


Wolvercote
Woodstock Road
61
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Oxford
R30XF

Current flood management strategies

- Combination of **land use zoning** and **flood relief schemes**

Land use zoning

- Usually areas closest to the river that are at risk of flooding
- These areas are given over to farming (Cherwell Valley), recreation (Port Meadow), sports grounds (Magdalene College playing fields) and allotments.
- Causes some economic disruption but does not lead to loss of life or property

Flood relief schemes

- Flood relief channels
- Channel dredging
- Flood prevention schemes
- Levees
- Channel scour
- Channel straightening

>> Resulted in decline in peak flood levels and length of flood periods between Oxford and London.

Urbanisation

- Increasing urbanisation has increased the rate of runoff into the main river by increasing the proportion of impermeable surface and increasing the drainage density.

But this is also POSITIVE

- Improved land drainage (sewers etc) has the potential for increasing and decreasing flood levels
- If runoff is increased, less water remains in the soil which means less chance the soil will become saturated


KEEP
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FLOOD

Proposed flood management strategies

Flood relief channel

- Environmental Agency (EA): most effective solution to flooding in Oxford is an 8km long, 25m wide flood relief channel from the R. Thames at Binsey to Sandford Lock

BUT

- Flood relief channel could impact the Oxford Meadows Special Area of Conservation

BUT…

- Flood relief channel could impact the Oxford Meadows Special Area of Conservation and Iffley Meadows Site of Special Scientific Interest (SSSI).

So, environmental needs were seen as greater and the flood relief channel is no longer being considered.

Water storage areas

- The use of four large water storage areas beside the Thames and the Cherwell north of Oxford.
- Consist of large areas of farmland that would be allowed to flood.

Other possible solutions considered…

- Building above-ground reservoirs upstream of Oxford (dismissed as too expensive and unworkable)
- At Sherborne, Gloucestershire the National Trust have restored extensive riverside water meadows
- EA has reinstated meanders on stretches of the River Windrush
- Otmoor, near Oxford, RSPB has raised water levels on 267ha of formerly arable land and created a 22ha reedbed reservoir with the help of the EA (holds ½ million m^3 of winter rain)

BUT, these initiatives have always been underfunded in comparison to hard-engineered and flood relief schemes.

Autumn 2010

Background to the strategy

Upstream and downstream, along the River Thames, there are ancient flood meadows that have protected people when the river is in flood. Over the years, building in the Oxford floodplain has removed some of that protection. Currently, more than 3,000 properties would be at risk in a 1-in-100-year flood. It is a combination of the location, landscape and geology that makes the city so vulnerable to flooding. We need to restore the balance. We have identified a sustainable solution to reduce the risk of flooding to people and properties in Oxford whilst conserving and enhancing the area's very special environment.

Environment Agency

Our plan of action

We have already:

- developed stronger links with local communities and partners by introducing short term flood risk measures following the summer floods of 2007.
- improved protection for more than 90 properties at risk from frequent flooding.
- removed silt and overgrown vegetation along stretches of the Bulstake Stream, Hinksey Stream, Hinksey Drain and Seacourt Stream over the past two years.
- made engineering improvements on the city's river system.
- provided demountable flood barriers for Osney Island and Hinksey Park.
- completed a multi-agency flood plan with our partners to provide a co-ordinated response to future flood events.

In the future we plan to:

- install raised flood defences as part of a local flood scheme in Wolvercote in north Oxford.
- help householders to protect their property from flooding.
- improve watercourse maintenance through de-silting and vegetation clearance.
- replace assets as they reach the end of their useful life.
- improve the flood protection to more than 1,600 properties in Oxford to a 1 in 75 year standard, if the predicted effects of climate change materialise.
- provide environmental enhancements in the wider study area to include creation of new habitat.

We will regularly review the strategy to ensure that we monitor flood predictions in and around Oxford. This work will help us observe the effects of climate change. We will plan for a conveyance channel around the west and south of Oxford, if the reviews recommend it. We also have plans ready for upstream flood storage, if needed


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