

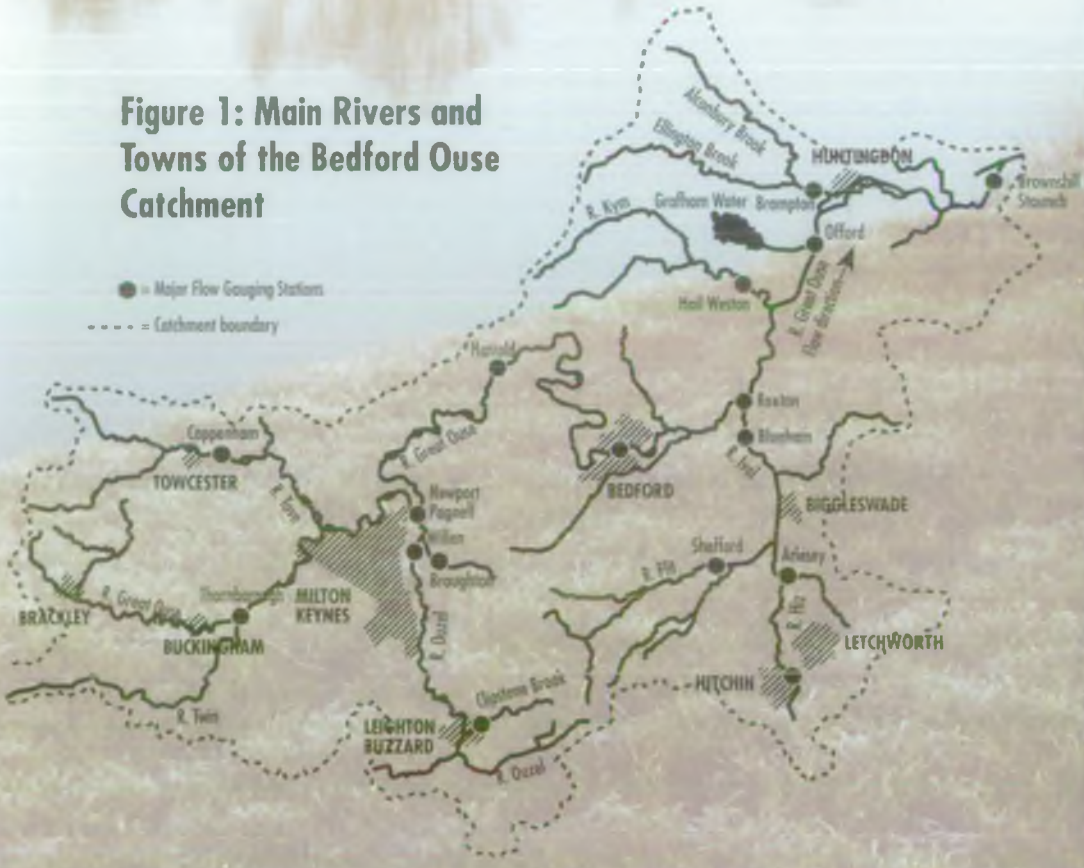
# FACT FILE

## The Great Ouse (Bedford Ouse)

### FACTS IN BRIEF

- Rising near Whitfield, north of Brackley in Northamptonshire, the Bedford Ouse is the upper fluvial section of the River Great Ouse.
- From source it flows 182.9 km in a north easterly direction to Brownsill Stauch near the village of Over in Cambridgeshire. An NRA designated main river, the Bedford Ouse incorporates several major tributaries including the Twin, Tove, Ouzel and Ivel.
- Predominantly underlain by impervious clays the river responds rapidly to rainfall and contains a diverse biological life in its watercourses.
- Within the Bedford Ouse catchment area of 3,054 sq km lie the high-population towns of Milton Keynes, Bedford and Huntingdon as well as low density agricultural areas.
- Many historic market towns such as St Ives and St Neots, as well as several attractive thatched villages, the Hemmingfords and Needingworth can be found in the eastern section of the river.

**Figure 1: Main Rivers and Towns of the Bedford Ouse Catchment**



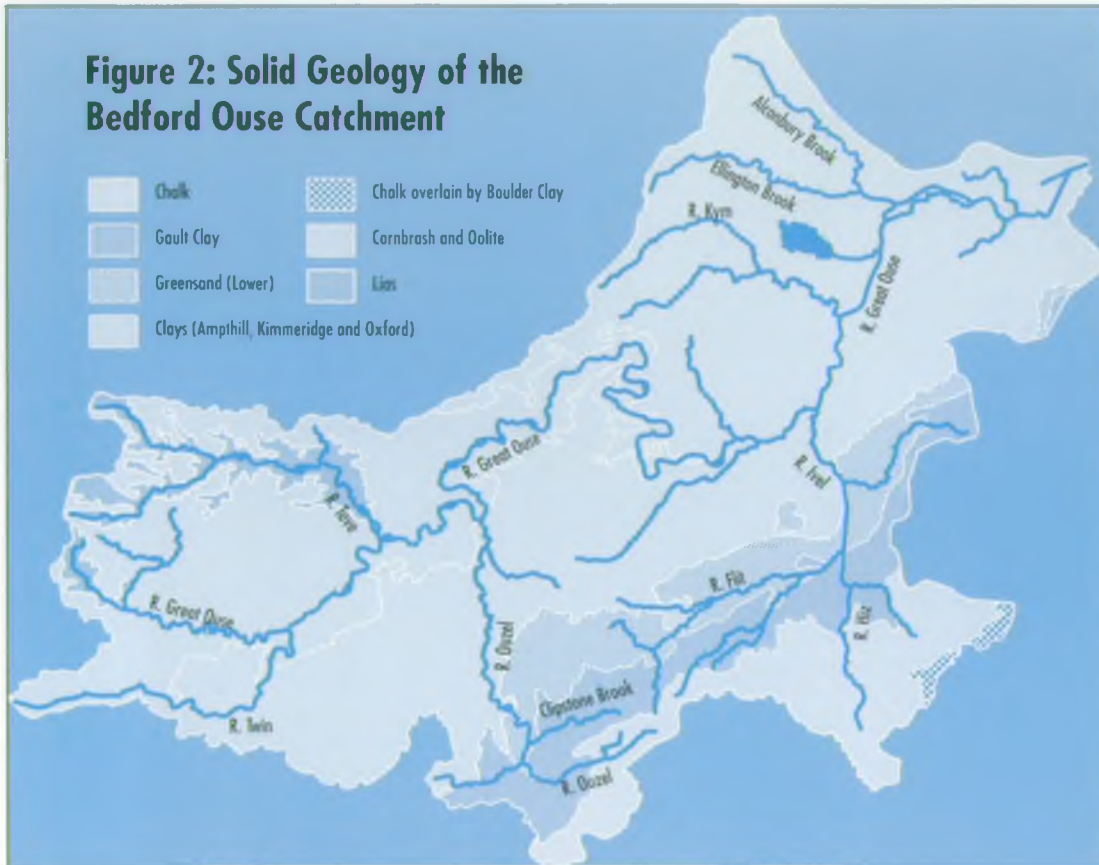
Guardians of  
the Water  
Environment



Anglian Region



**Figure 2: Solid Geology of the Bedford Ouse Catchment**



problems particularly in long-term drought conditions. Usually the Ouse has sufficient resources to meet environmental needs and abstraction demands. Low summer flows are supported by treated effluent returns from urban sewage works, allowing direct abstraction for public water supply to be maintained during dry periods.

River flows are monitored at gauging stations along the length of the Bedford Ouse and its main tributaries. Hydrologically any discussion about the river must include the effect on the following contributing rivers:

## GEOLOGY OF THE BEDFORD OUSE

The source of the river is along the 150 metre AOD (above Ordnance Datum) contour north of Brackley, a number of springs emerge from the permeable Oolite limestone.

Flowing easterly downstream of Brackley the river passes over the permeable Cornbrash and Oolite limestone of the Great Oolite Limestone series. Joined by the River Twin at Thornborough the Ouse then flows north easterly, with inputs from the Ouzel and Tove until it reaches Bedford 94 km further on.

From Bedford to Brownhill, a distance of 57.8 km, the underlying geology is impervious Amphill, Kimmeridge and Oxford clays, the nature of which can create flooding problems. This stretch of river is fed by numerous secondary watercourses sourced from the Lower Greensand and Chalk to the east and by direct run-off from the west.

The geological relationship within the catchment is shown in Figure 2.

## HYDROLOGY

Compared with the National average of 940 mm per year, rainfall in the Bedford Ouse catchment is low at 600 mm. Recorded rainfall is higher in the southern section - 641 mm per year at Buckingham - than in the north where at Brownhill it averages 548 mm per year.

This low rainfall creates certain localised resource

Twin, Tove, Ouzel, Ivel (including the Flit and the Hiz) and Kym plus several brooks including the Alconbury, Ellington and Elstow.

At Newport Pagnell the long term annual mean flow is 311.4 thousand cubic metres per day (tcmd), exceeding 29.4 tcmd for 95% of the year. Downstream of Bedford at Roxton the flow increases to 967 tcmd and for 95% of the year exceeds 155.5 tcmd. After the input of most of the main tributaries the annual mean flow becomes 1197.9 tcmd, exceeding 164.2 tcmd for 95% of the year. Downstream of Offord flows increase further with input from the Alconbury and Ellington brooks.



*Spray irrigation.*

Major abstractions by Anglian Water for public water supply are made at Foxcote, Clapham and Offord, which are the main intakes for Grafham and Foxcote reservoirs

## WATER QUALITY

Formal water classification is based on the National Water Council (NWC) system. In the 1990 classification for the Bedford Ouse its major tributaries plus the Grand Union Canal were included.

Almost the full length of the Bedford Ouse is good quality. In the more urbanised southern areas around Dunstable, where the Ouzel begins and Hitchin, source of the Hiz and Ivel, the water is designated fair to poor.

All the river downstream of Bedford is good with the exception of two small stretches of the River Kym and Alconbury Brook which are fair.

In spite of effluent discharge from major sewage works at Buckingham, Milton Keynes and Bedford the final overall quality allows maintenance of an adequate public water supply. It is significant that no stretch of the river is designated bad.

Breakdown for the total 522 km in the system is:

Class 1A (very good)	0 km
Class 1B (good)	317.7 km (plus 38.6 km of the Grand Union Canal)
Class 2 (fair)	125.5 km
Class 3 (poor)	40.2 km
Class 4 (bad)	0 km

The NRA has 125 chemical sampling points and 172 biological sampling points on the River Great Ouse at which we monitor water quality.

## FLOOD PROTECTION

With the impervious geology dominating the catchment,



*Haversham Weir, looking upstream.*

the river's response to rainfall is rapid giving a maximum flood movement of 2.8 km an hour from one point to another on the river stretch.

One of the worst recorded floods, in 1947, caused severe damage. Fortunately improvements which followed minimised potential damage from recent flooding in 1987 and 1992.

Maintained by the NRA along its length of 182.9 km the river's levels are controlled artificially by sluices, locks, weirs and old mill structures. The principal flood warning station on the Bedford Ouse is at Newport Pagnell, north-east of Milton Keynes. There is also a station at Brackley and on the main tributaries.

Although dry for much of the year, a system of balancing lakes in the Milton Keynes area provides an important flood storage reservoir. The two main lakes closest to the river are Willen and Caldecote, designed as temporary diversion structures.

Private and commercial property and agricultural land are thus protected while appropriate fishing and recreational levels are sustained.

Full information about NRA flood defence programmes and management in the Anglian region can be obtained from The Public Relations Department of the NRA.

## NAVIGATION

Part of the major navigation network in the Anglian region, the Bedford Ouse is navigable from Kempston, south of Bedford, to Brownshill. Over 62.6 km there are 15 locks which control levels and facilitate movement of the considerably heavy summer traffic as enthusiasts explore the traditional East Anglian landscape. As the River Great Ouse, the waterway is further navigable to the Denver Sluice at Downham Market in Norfolk. It finally flows into the Wash at King's Lynn.

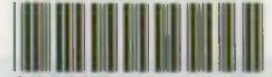
## LAND USE

The Anglian region is one of the fastest growing in Britain and population increase brings demands on land and water resources.

Agriculture within the Bedford Ouse catchment consists of a variety of pasture and arable farming where the flood plain allows crop growth. These are generally irrigation dependent.

The area contains many light industries and is subject to continual development.

Proposed new motorway links and upgrading of existing major roads, particularly in the Huntingdon area, should further increase traffic and the population throughout this stretch of the catchment.



## FISHING

The Anglian region contains some of the finest fishing areas in the country and the Bedford Ouse offers an interesting experience for a wide variety of coarse (cyprinid) fishing.

Its natural ecology divides the river into two habitat areas. Upstream of Bedford the erosive, non-navigable section supports a greater diverse population. Here over 15 species have been recorded with roach, pike, chub and common bream most prominent.

Downstream of Bedford the ponded, deeper navigable river retains a good coarse fish total though with fewer chub and dace and more roach and bream.

Approximately 40 angling clubs lease water in this area and revenue from fishing licence fees helps to pay for a wide range of riverine activities.

## RECREATION AND CONSERVATION

Flowing through an area of Britain particularly rich in visual appeal and unspoilt rural serenity, the Bedford Ouse offers some of the best locations for water-based recreation and waterway activities. Boating enthusiasts, walkers, photographers, visitors and residents; a growing number of people appreciate the attractions every year.

One of the most notable riverside public footpaths, the Ouse Valley Way extends from from St Neots to Earith.

North east of St Neots on the B661 near Buckden, Grafham Water is a popular amenity with facilities for fishing, sailing and a nature trail.

Canoeing is popular and a purpose-built slalom at Cardington near Bedford provides excitement and enjoyment.

Flood meadows are an important feature of the Bedford Ouse valley. Though reduced in number since the beginning of the century those still existing are of major conservation value.

Because of their botanical importance several sites in the St Neots - Huntingdon area are sites of Special Scientific Interest (SSSI). These include St Neots Common, Brampton Meadow and Portholme Meadow.

## FLORA AND FAUNA

Rivers form a 'green road' through the countryside, supporting a wide variety of plant and animal life. The species present are determined principally by physical features such as channel gradient and substrate and by water chemistry.



*Fishing at St. Ives*

Upstream where the Bedford Ouse is a meandering river channel characterised by gravel riffles and deeper pools, plant species such as river crowfoot, pondweed and starwort flourish within the channel. Common reed, sedges, foals watercress and common club-rush are established in the river margins. Blackthorn, alder and field maple provide valuable hedge lines on some areas of the river banks.

Adjacent to rivers areas of flood meadow grasslands add significantly to the diversity of the Bedford Ouse corridor.

The aquatic and terrestrial habitat reveals invertebrates low in the food chain such as mayflies and caddis flies up to species such as heron, kestrel and mink.

## NATIONAL RIVERS AUTHORITY

An independent public body, the National Rivers Authority was created under the Water Act of 1989. It is responsible for protecting and improving the natural water environment. Regulatory and statutory duties include: flood defence from rivers and the sea; environmental quality and pollution control; water resources; fisheries; navigation and recreation. The NRA is committed to improving wildlife habitats and conserving the natural environment.

The Anglian Region, geographically the largest of the 9 regions in England and Wales, stretches from the Humber Estuary to the Thames, from the Norfolk coast to Northampton. It covers more than 27,000 square km - almost 18% of the total NRA - and over 5 million people live in the area.

A range of brochures containing comprehensive information about all aspects of the NRA's work is available by writing to the Public Relations Department stating your particular area of interest or study.