

NRA Thames 176

*fact File*

# RIVER RAY (WILTS)



**GUARDIANS OF THE WATER ENVIRONMENT**



**NRA**

*National Rivers Authority  
Thames Region*

# Fact File - RIVER RAY (WILTS)

## FACTS IN BRIEF

- The Ray rises to the south of Swindon and flows in a northerly direction to its confluence with the Thames at Water Eaton, just to the east of Cricklade.
- The Ray catchment covers an area of 80 square km.
- The average rainfall in the Ray catchment is 700mm.
- The normal summer flow in the Ray is approximately 45,000 cubic metres per day. However, the river is very responsive to rainfall, and the maximum recorded flow is just over 2 million cubic metres per day.
- The fall in the river from its source to its confluence with the Thames is 97m, over a distance of approximately 21km.

## THE NATIONAL RIVERS AUTHORITY

Established on 1st September 1989, the NRA is an independent public body charged with safeguarding and improving the natural water environment. It is responsible for flood defence, regulating the quality of rivers and groundwaters, balancing the needs of various water users, protecting and improving fish stocks and promoting water-based recreation of all kinds. The NRA is committed to improving wildlife habitats and conserving the natural environment in all its undertakes.

## PLANNING LIAISON

The NRA works with local planning authorities to protect the Ray catchment from undesirable development.

## WATER QUALITY

The upper reaches of the Ray are of a reasonable quality, with a base flow from springs. However, most of the catchment is on clay, which makes it subject to very variable flows in response to rainfall. This is accentuated by urban development which covers about 26% of the catchment and is largely impervious. The lower part of the river is, therefore, affected by urban run-off. However, the water quality is dominated by the effluent from Swindon sewage works, due to the large volume of the discharge.

There are 10 regular quality monitoring points within the Ray catchment.

## WATER QUALITY OBJECTIVES

From	To	Length Km	Objective
<b>RAY</b>			
Source	Swindon STW	9.0	2B - Fair
Swindon STW	Haydon Wick Brook	7.8	3 - Poor
Haydon Wick Brook	Thames	7.8	2A - Fair
<b>WROUGHTON DITCH</b>			
Source	Wroughton STW	1.2	E*
Wroughton STW	Ray	0.9	2B - Fair
<b>LYDIARD BROOK</b>			
Greatfield	Perennial Source	1.2	E*
Perennial Source	Rodbourne Tip	3.7	1A - Good
Rodbourne Tip	Ray	0.7	3 - Poor
<b>HAYDON WICK BROOK</b>			
Haydon Wick	Ray	2.8	1B - Good

E\* - Ephemeral: stream is regularly dry. When flowing it should comply with the objective of the downstream reach.



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## WATER RESOURCES

The River Ray derives most of its flow from springs and seepages rising from the chalk escarpment to the south and from direct run-off from roads, paved areas and areas of clay soil. More than half the rainfall is lost through evaporation and the growth of plants. The remainder provides the water resource which in this catchment amounts to 58 Ml/d (million litres per day). This water must be shared between the flow of the river to support the natural environment and the community's need for water supplies to homes, industry and agriculture.

In order to ensure that there is sufficient information on river flows, the NRA carries out regular measurements and has a number of fixed gauging stations. The flow in the River Ray is measured at one such site at Water Eaton, just above its confluence with the Thames.

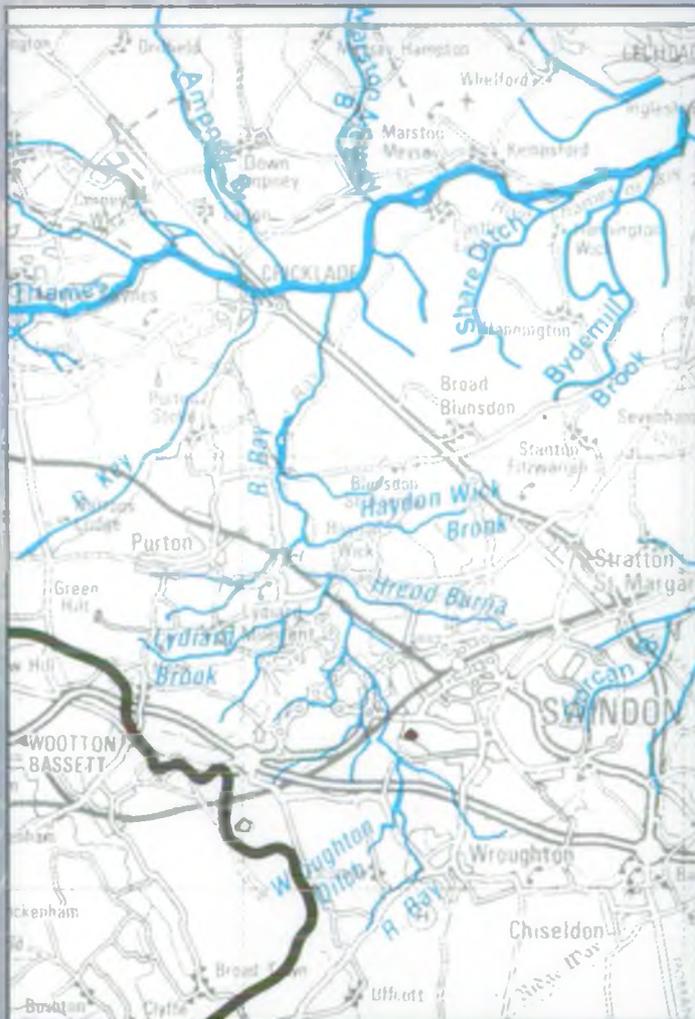
## BIOLOGY

Biological sampling of the River Ray by NRA biologists shows the aquatic fauna to be very poor and restricted to pollution tolerant groups. The freshwater shrimp is found throughout the river, but more pollution sensitive animals are rarely present. The diversity of the aquatic invertebrate community reflects variations in the quality of Swindon's sewage works' effluent and local surface water discharges.

## DISCHARGES

The following are the major discharges into the Ray and its tributaries. The figures given are the maximum amount permitted to be discharged.

Discharge	Cubk Metres per Day	Type of Effluent
<b>RAY</b>		
Swindon STW	132,900	Sewage effluent
<b>WROUGHTON DITCH</b>		
Wroughton STW	6,000	Sewage effluent



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## ABSTRACTIONS

Water can only be abstracted from rivers or groundwater under licence granted by the NRA. In the Ray catchment groundwater is the main source of supply and total licensed abstraction amounts to just under 3 Ml/d, about 5% of the average available resource. Much of the water abstracted is returned to the river through sewage treatment works together with water abstracted outside the catchment but used locally.

All abstraction licences specify the maximum amount of water which may be taken and they are regularly checked by the NRA's Licence Inspectors.

## TRIBUTARIES

The river is joined by several small tributaries on its way to the Thames. The largest of these are the Wroughton Ditch, which rises in Wroughton and receives effluent from Wroughton sewage treatment works before its confluence with the Ray, and the Hreod Burma, which rises in an industrial area and drains much of Swindon before joining the Ray above Elborough bridge. The Millicent stream rises in Lydiard Millicent and meets the Ray near Bromhill Bridge.

## FLOOD DEFENCE

Reducing the risk of flooding from the Ray and its tributaries on a day-to-day basis and planning major flood defence projects in the Ray catchment forms part of the NRA Thames Region's work.

The NRA's river control room at Reading keeps a round the clock check on weather conditions and river levels. Staff interpret the information and give the local emergency services early warning of possible floods.

A flood defence team is based at Oxford to carry out regular river maintenance work. This includes dredging, weedcutting, and removal of blockages. This team is mobilized during flood emergencies to keep rivers clear of obstructions so that flood waters can be conveyed away as quickly as possible. They also provide assistance to environmental quality staff in cleaning up after pollution incidents.

The NRA is committed to protecting and improving the natural river environment and wherever possible our flood defence work includes features of environmental conservation and enhancement.

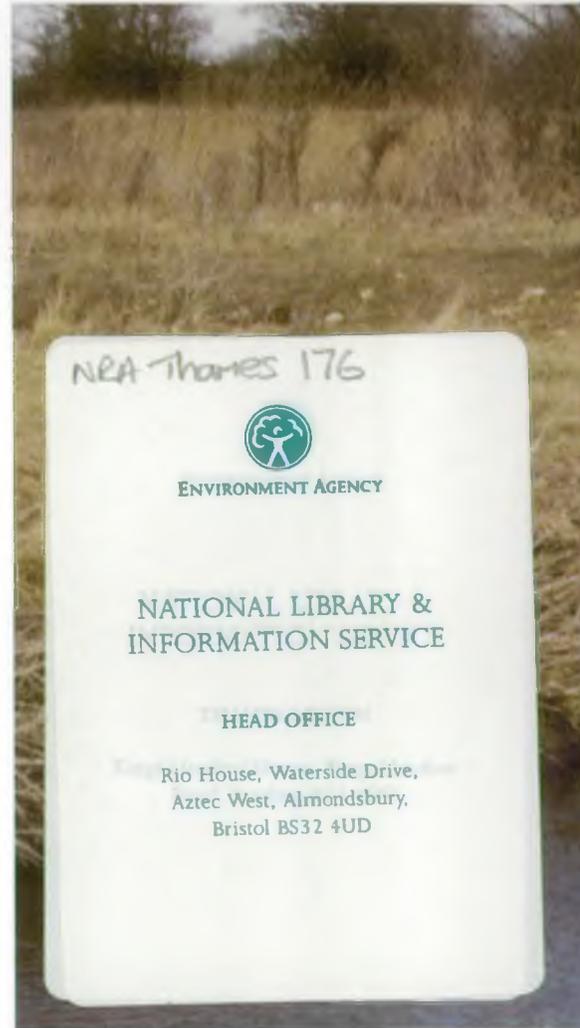
## FISH IN THE RAY

The River Ray is an EC designated cyprinid fishery between the Haydon Wick Brook and the River Thames.

During 1989 the NRA surveyed fish stocks in the river as part of a five year rolling survey programme. The main species found at the four sites investigated were roach and dace, with smaller numbers of pike-perch (zander), chub and gudgeon present.

The total fish biomass (that is the weight of fish per square metre of river bed) was low for much of the river, with only 50% of the EC designated sites reaching the target biomass set by the NRA. This appears to be mainly due to poor water quality.

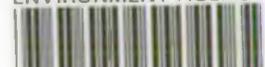
Further surveys are planned for the future in order to assess any changes occurring in the fish population.



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ENVIRONMENT AGENCY



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