



# THE EASTERN ROTHER



Royal Military Canal



National Rivers Authority  
 Information Centre  
 Head Office  
 Class No. 





## NRA

*National Rivers Authority  
Southern Region*

**Guardians of the  
Water Environment**

ENVIRONMENT AGENCY



099909



# THE EASTERN ROTHER

## COURSE

The Eastern Rother, so named to distinguish it from the river of the same name in West Sussex, rises at Churt House near Rotherfield which is some 150 metres (500 ft) above sea level. It then flows eastwards, South of Mayfield, through ridges of clay known as the Wadhurst and Burwash Ridges which once produced iron and timber for the towns and the Sovereign's fleet. Before reaching Witherenden Bridge, the river passes the old Bivelham Forge and is joined by the Tidebrook Stream. This length can be called the Upper Rother.

Below Witherenden the river collects the Dudwell and continues in an easterly direction to Etchingham. It passes many mills and millstreams on its route to Robertsbridge. Udiam with its Roman road signals the end of the middle length and a change in the characteristics of the river.

Between Udiam and Bodiam the transition is from upland flow to lowland flow as the river reaches sea level. Below Bodiam the Kent Ditch, which is the boundary between Kent and Sussex, joins the river from the North. The valley then widens and land use changes from mixed to arable farming.

The lowland Rother continues to Newenden, which until the 16th Century was an important port used for both legal and illegal trading. The Hexden Channel joins the river from the North at the site of a Castle Toll of unproven history. Flowing through the Wet Level, South of the Isle of Oxney, the river takes a new cut made in the 17th Century before rejoining its old course (North and East of Oxney and now known as the Reading Sewer). The Royal Military Canal, links into the river at Iden Lock.

The tidal limit of the river is Scots Float Sluice at Playden which was built in 1984 to replace the previous sluice of 1831. Here river flow is interrupted twice a day by the

sea. Drainage from part of the Walland Marsh enters the tidal section via the Union Channel.

Also draining to the estuary are the Rivers Tillingham and Brede. These flow from Staplecross and Netherfield through mixed farming country and join the Rock Channel on the southern side of the ancient town of Rye.

## HISTORY

Place names such as Ordnance Place, Cinderhill, Powdermill and the various Forges preserve the memory of the iron working activities in the area. There were for example, no less than ten iron working sites within three miles of Mayfield Church. The ore was first exploited in the Iron Age, and then by the Romans and sporadically through the Middle Ages. The headwaters were used for cooling the molten masses of iron which were extracted by heating within a charcoal mound. By Tudor times, blast furnaces revolutionised the industry. The draught from bellows created higher temperatures allowing cast iron to be produced and wrought. The steep streams were ideal for damming to give a head of water to drive water wheels for bellows and forging hammers. At that time, more than half the iron-mills of the country were situated in the Weald.

The history of the lower reaches of the river and of the Romney Marshes is almost lost in the mists of time. Longshore Drift, the process by which shingle is driven from West to East by waves induced by the prevailing south westerly winds, has been the major force in shaping the river outfalls and the associated marshlands.

It is probable that in late prehistoric times, a long and continuous shingle ridge stretched most of the way across the shallow bay between Fairlight and Sandgate. Behind this lay a large lagoon into which the Rivers Brede, Tillingham and Rother flowed. The main outlets for the Rother were further East, between Lydd and Romney near the present site of West Hythe. Siltation in the lagoon eventually allowed marshlands to be reclaimed or "inned" and in the process caused the outfall to move westward twice.

Man's continuing efforts drained the land and made it

habitable and agriculturally profitable. Today some 27,000 ha of wonderfully fertile land lie between the old sea cliffs and the coastline. Altogether, more than two thirds remains below the level of high tides, depending on flood defences and land drainage for its preservation and productivity.

In early Roman times the river was known as the Limene and entered the sea near Hythe. A Roman fort, the remains of which are easily seen, was built near the present Lympne Castle site to protect the harbour, Portus Lemanis. By Mediaeval times the unrelenting shingle drift and siltation within the lagoon had caused the river mouth to move back to Romney, which with Hythe, Hastings, Dover and Sandwich was one of the Cinque Ports. This in turn set up the formation of the shingle promontory known as Dungeness.

A succession of storms and floods savaged north-western Europe during the thirteenth century. A great storm in 1287 caused the river to forsake its old channel to take a shorter, more westerly route to the sea by Rye. Accretion of shingle seawards at a rate of several metres a year, has resulted in the river now discharging some 4 km from the town.

Through the centuries progressive reclamation of land and the construction of sluices greatly reduced the amount of tidal water ebbing and flowing through the estuary. This encouraged siltation in the harbour and the formation of a shingle bar across the river mouth. In this context the needs of seafarers and land-owners have inevitably been in conflict and have still to be resolved by compromise.

## GEOLOGY AND HYDROLOGY

In the heart of the Weald the Wadhurst Clay is some 45m thick and separates the Ashdown and Tunbridge Wells Sands. Being impermeable to rainfall, the clay dictates the flashy character of the headwaters. In winter they respond quickly to rainfall, but in summer they lack strong springs such as those issuing from chalk areas elsewhere in the region.

Some water supplies in the

area are taken from underground and the principal water bearing rocks are the sandstones, particularly the Ashdown Sands. However, most of the water needed for public supply is taken from rivers and reservoirs.

Water is pumped from the river at Robertsbridge to Darwell Reservoir some 3 km away. The reservoir is operated by Southern Water Services Ltd which uses it for direct supply. Constructed in 1950, it has a maximum storage capacity of 4460 MI and a design yield of 21.9 MI/d. The reservoir occupies 69 ha but is currently being enlarged. Powdermill Reservoir, located on the River Brede, is a small impounding reservoir used for direct supply. With a surface area of 21 ha, it has a storage capacity of 808 MI. Southern Water Services Ltd also abstracts underground waters from the Brede Wells to its Brede Water Treatment Works.

River flows are measured by a gauging weir at Udiam and by an ultrasonic flow gauge at Blackwall Bridge near Wittersham. There are flow gauging stations on the River Dudwell, the River Brede and the Hexden Channel.

There are a large number of minor abstractions for agricultural purposes in the catchment, particularly for spray irrigation on the Romney Marshes and in the Shirley Moor area. High value agricultural crops such as potatoes, depend to a large degree upon the availability of this water. The National Rivers Authority operates and enforces an abstraction licensing system which ensures that water is taken at the right times and only from the places where it can most be spared.

South of the Marshes lies the shingle promontory of Dungeness. This is an area of unique importance for a wide range of bird life and also an important source of water for the Folkestone and District Water Company. Large volumes of fresh water are taken daily from beneath the shingle for public supply. Gravel extraction for the construction industry involves the NRA in considerable investigatory work to ensure the integrity of the water supplies in the shingle and to safeguard them from saline intrusion.





Upper Rother



Bodiam Castle



Royal Military Canal at Stone



Gauging Weir, R. Duddwell



Powdermill Reservoir



R. Rother at Newenden



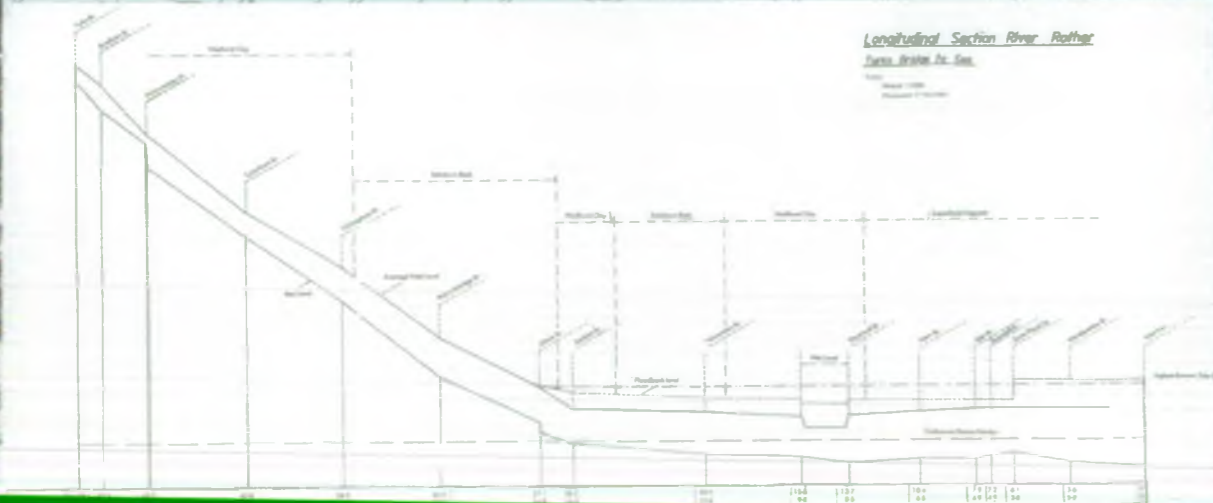
Darwell Reservoir



Scots Float Sluice



Dry Dock, Rye Harbour



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Rainfall in the upper Rother catchment averages 890 mm per year which is generally heavier than elsewhere in Kent. This is because the prevailing south-westerly winds carry moisture from the Atlantic and English Channel. Some of this condenses into rainfall as the air lifts and cools over the relatively high ground of the Weald.

## WATER QUALITY

The National Rivers Authority has set high water quality objectives for the rivers of the Rother catchment which for most of their lengths have objectives of 1A or 1B (high water quality suitable for game and high class fisheries.)

There are however stretches where low flows or low dilutions make Class 2 (suitable for reasonably good coarse fisheries) a more realistic objective. These include a short stretch of stream below Battle Sewage Treatment Works, and the lower reaches of the river between the Rother Levels and the tidal limit. To ensure that the river meets its objectives the NRA sets limits on all permitted discharges, restricting the strength and volume of effluents.

The catchment is predominantly rural and the population is spread mainly across small towns and villages so there are no large sewage works. The three largest, Tenterden, Battle and Rye have flows of 1,730, 1,130 and 1,180 m<sup>3</sup>/d respectively.

Intensive dairy farming has generated considerable pollution problems in the past. The steeply sloping land aggravates slurry and silage pollutions, particularly during periods of heavy rainfall.

After agriculture, the major industry in the area is gypsum mining in the Mountfield and Brightling area. From time to time the discharge of mine-water has resulted in high sulphate levels in the River Line, a tributary of the River Brede.

The lower Rother catchment and the Romney and Walland Marsh area are characterised by sluggish or static water-courses and whilst being of good quality are prone to de-oxygenation, particularly during the dry summer months.

There is considerable light

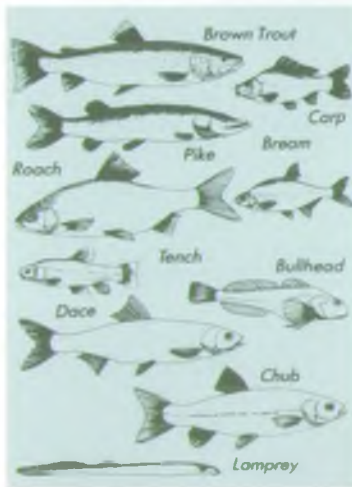
industry in the Rother Estuary within the Port of Rye, including a timber wharf, several small boatyards, an oil refinery and a solvent extraction works but in general these do not affect water quality.

## FISHERIES

The Rivers Rother, Brede and Tillingham all support good coarse fisheries as well as runs of sea trout. The sea trout are large, compared with elsewhere in the country, averaging 2–2.5 kg (4.5–5 lbs) and some fish reach sizes in excess of 6 kg.

In the High Weald where the water is iron rich and acidic, there are populations of highly coloured, small brown trout. Bullheads, brook lampreys and stone loaches are also found in the fast flowing headwaters.

The middle reaches support good populations of dace and chub whereas the lowland reaches, with their more moderate flows, contain stillwater species and fish which are more tolerant of lower oxygen levels. These include bream, roach, tench, carp and pike.



Fishing rights on 23.5 km of the Royal Military Canal rest with the National Rivers Authority which leases them to five angling societies. The Canal is an important match venue for large competitions including National events.

## FLOOD DEFENCE

The forces of river and sea, together with the efforts of man, created Romney Marsh and earned the area its reputation as the cradle of land drainage and sea defence organisa-

tion. By the 12th century there were 'Laws of the Marsh'; statutory rules for the direction and control of sea defence and land drainage. An ancient corporation, known throughout its history as the Lords, Bailiffs and Jurats was established by Royal Charters in 1252 and 1462. It exercised its functions from New Hall, Dymchurch, until 1930 when the first Land Drainage Act created Catchment Boards to undertake flood defence duties.

Today, the National Rivers Authority, like its predecessors the Kent River Board, the Kent River Authority and Southern Water Authority, has responsibility for the harbour, land drainage and sea defence. Additionally, much smaller local organisations set up by the Land Drainage Act (1930), called Internal Drainage Boards, levy rates and look after smaller watercourses in the separate marshes in the area. The NRA carries out land drainage work on behalf of these which comprise the Romney Marsh Levels IDB, Walland Marsh IDB, Denge & Southbrooks IDB, Rother IDB and Pett IDB.

In addition to the large areas of low-lying, reclaimed land in the lower catchment, the topography has an important bearing on the land drainage and flood defence role. The upland catchment is steep and relatively impermeable; consequently in wet weather there is a high rate of run-off. The lowland valley below Bodiam then becomes a flood storage lake which can discharge only intermittently between each high tide. The river cannot always store this water within its banks when it is tide-locked, and when tide-free, its discharge is restricted by the small cross-section of the upper reaches of the estuary. These two factors result in frequent and extensive flooding of the valley.

The exceptional floods of November 1960, when the peak run-off came at the end of an extremely wet period of five days, exceeded in level anything previously recorded, and most of the valley was inundated.

Between 1966 and 1980 an improvement scheme was installed. The river banks were raised throughout most of its length to increase storage and avoid overtopping. However,

some land was still needed to store floodwater in the most extreme conditions, so the flood banks in the region of the Wet Level were built to a lower level to permit overtopping in extremity. This provided an area of about 280 ha (700 acres) to store floodwater whilst the outflow from the river to the sea was tide-locked.

For land drainage purposes, provision was made to pump water from low lying land up to the high river level. Twenty Archimedean screw pumping stations now drain the marsh areas and also deal with the upland water. Similar provisions were made for the Rivers Brede and Tillingham.

Historically the drainage pattern of the marshes had been radically changed at a stroke by the building of the Royal Military Canal for military defence against the French in 1803–5. Its potential for capturing upland water from the hills was quickly appreciated. Water from the Marsh was lifted into the Canal, first by windmills and then by steam pumps. Today the Marsh is still drained to the Canal by pumping stations at Shirley Moor, Appledore, Warehorne, Ruckinge IDB and Bilsington. A pumping station at Union Sluice drains the Walland Marsh to the tidal Rother and others at Greatstone, St Mary's Bay, Dymchurch and Camber help to drain small areas of marsh directly to the sea.

The Royal Military Canal – military defence work, highway, land drain, fishery and thing of great beauty – also serves as a reservoir during the dry summer months when its water, impounded by sluices at Appledore, West Hythe and Iden Lock can be fed through penstocks into the thirsty marsh sewers. This can be supplemented by water pumped from the river to provide wet-fencing, cattle watering and also water for spray irrigation.

Along the coast, the shingle drift which gave birth to Romney Marsh still continues its relentless passage eastwards. Now, NRA flood defence engineers work with the sea, using the shingle it supplies as a "soft" sea defence. Shingle absorbs the energy of storm induced waves and moves with the forces of nature. By recycling shingle from the areas



where it accumulates to those where it has been depleted, the NRA maintains a shingle cushion to resist the impact of winter storms. Approximately 30,000 cu metres of shingle per year are taken from Nook point and recharged to Cliff End to keep pace with erosion and to keep the river mouth at Rye Harbour free from blockage. A similar quantity is recirculated from the point of Dungeness back to its South facing coast and northward to Littlestone and St Mary's Bay.

## NAVIGATION

Rye Harbour has a special importance to agriculture; it provides the outlet channel through which water drained from extensive areas of low lying land is discharged. For this and other reasons, it has the unique status of being the only harbour owned by the NRA.

However the harbour is far more than an agricultural drain. Since time immemorial and in contrast to other Cinque Ports of "stranded pride", it has survived on its merits as an active and useful port in peace and war. Today, despite siltation, it provides moorings for a prosperous fleet of inshore trawlers and for some 500 small pleasure boats. A privately owned wharf handles cargoes of timber, grain, aggregates, rubber and fertilizers as a result of 200 visits a year by small cargo vessels.

To assist in discharging these responsibilities the NRA employs a Harbour Master and Assistant Harbour Master. There is also an Advisory Committee, composed of harbour users and representatives of organisations having an interest in the running of the Harbour Pilotage and Customs Services are provided and an inshore RNLi life-boat is stationed in the port.



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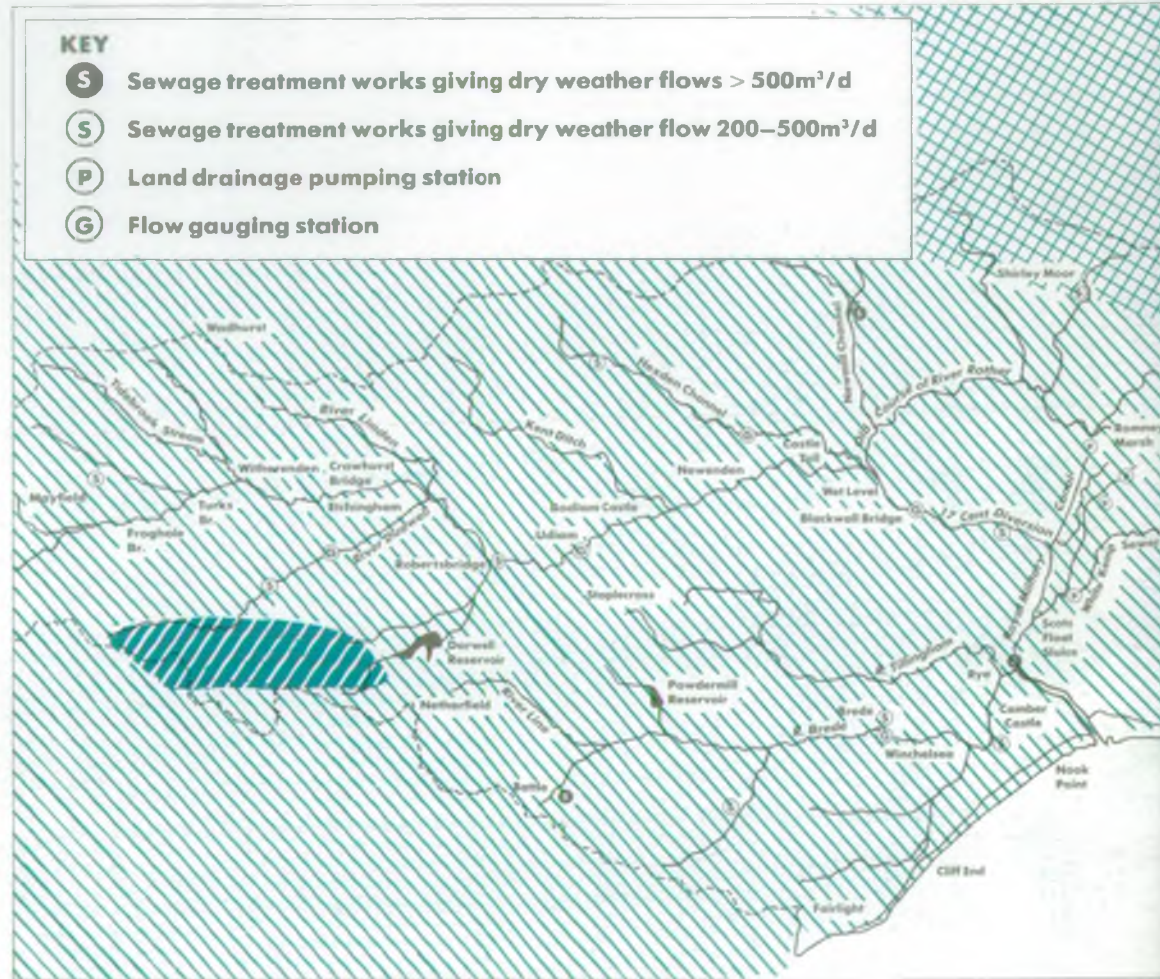
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\*Available on request from NRA Southern Region



Sections showing the general relations of the rocks along the lines X-X', drawn on the map



Vertical Scale about ten times the Horizontal

