

THE KENTISH STOUR



National Rivers Authority
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National Rivers Authority

Southern Region

Guardians of the Water Environment

THE KENTISH STOUR

COURSE AND GEOLOGY

The Kentish Stour is the major watercourse in East Kent, which in its various guises originates above Ashford 75 metres above sea level and enters the sea at Pegwell Bay.

There are two main tributaries, the Great Stour itself, which rises to the North West of Ashford close to the small village of Lenham, and the East Stour, which rises close to Folkestone Racecourse, to the South East of Ashford. Minor tributaries issuing from the Lower Greensand and the chalk contribute to the two streams which come together in Ashford. The river then flows in a north-easterly direction through Wye, and through the chalk of the North Downs to Canterbury. Below Canterbury, the river passes through younger rocks such as Brickearth and Thanet Beds. Valley deposits are largely alluvial, comprising fine marine and river alluvium around the old Wantsum Channel, and clay with flints on the chalk dip slopes. Some fifteen kilometres downstream of Canterbury, the Great Stour is joined by the Little or Lesser Stour at Plucks Gutter. This drains water from the South via the Wingham River and the Nailbourne Stream.

Below Plucks Gutter the river is known simply as the River Stour and flows South towards Sandwich through a large loop before entering the sea back to the North at Pegwell Bay.

The Kentish Stour is a fairly modest sized river with a tidal reach of 35 km extending upstream to Fordwich Bridge. The non-tidal Great Stour measures 58 km and the East Stour 16 km. In the upper reaches both the East Stour and the Great Stour are about 2–3 m wide, increasing to 5 m at Ashford, 10 m to Canterbury and 20–30 m in the tidal reaches.

HISTORY

There are several mills on the river course, the majority no longer in use and some totally derelict. Most of the Stour water mills have been used since records began:

*"Little mill that clacks
So busy by the brook
Ground its corn and paid its tax
Ever since Domesday Book"*

When the Romans constructed Watling Street between Dover and London they made a ford across the River Stour at what was then perhaps the upper limit of navigation. A settlement grew up at the intersection of the two routes; it prospered and with the passage of time and the spread of Christianity it developed into the ecclesiastical capital of England.

Becket's shrine was the source of Canterbury's medieval wealth, but the river continued to mould the physical shape of the city. Though the channel was gradually silting up and shrinking, the water continued to power mills, some industry and meet the daily needs of citizens, supplying their washing water and sewerage system as well as a ready made moat for the city defences. Most of the substantial buildings of medieval date that have survived, apart from the Churches, are to be found on or near the river. These include the castle, the Franciscan and Dominican Priors, the charitable hospital foundation called St. Thomas's Hospital (which is actually built across the river on a Gothic tunnel) and the noble towers of the Westgate.

The original name of Sturry the downstream settlement, is believed to have been Estura, probably derived from the old name of the river AEstur.

By the ninth century Fordwich was the navigable limit of the river for trading vessels and enjoyed supremacy as a port until modern times when the creation of the Canterbury to Whitstable railway in 1830 put river transport into decline.

In its heyday, Fordwich was granted the privilege of a Gylde Mercatoria (Merchants Guild) by Henry II and by the early thirteenth century became a member of the Cinque Ports confederacy. The ancient crane still stands on the river bank whilst the ancillary

ducking stool is displayed in the medieval court hall. The widening of the river valley below Chilham suggests that in Prehistoric times this was the tidal limit of the river. The apocryphal reports of a find of Hippopotamus bones at Chartham would lend support to the theory. In those remote times, as its name suggests, Stourmouth marked the point where the river reached the sea. Thanet was then truly an island separated from the mainland by a tidal strait known as the Wantsum Channel.

The Romans guarded this strategic channel at both ends by forts, Regulbium at the North end and Richborough or "Portus Rutupis" (itself a small island) where the channel reached the East coast. This site is now inland of Sandwich.

Longshore drift, the process by which sand and shingle are moved by the action of wind and tides, operated in those days from North to South. As new material was deposited across the outlet of the river to the English Channel, the river mouth was turned progressively southwards, accounting for the first part of the U bend which the tidal river makes today. It was on this spit that Hengist and Horsa landed in AD 449 and where Augustine first brought Christianity to England in AD 597. In the ensuing period, or perhaps before, the direction of the longshore drift reversed, possibly due to the disappearance of an island in the vicinity of the Goodwin Sands. A new shingle bank began to form, this time turning the river northwards and completing the U bend around which the river now flows.

By 600 AD the deposits had blocked the port of Richborough and around this time a settlement appeared on the newly accreted sandbank appropriately named Sandwic or Sandwich. Its strategic position in relation to the continent destined Sandwich to become one of the five great English ports, known as the Cinque Ports.

Around the same time the accretion of material which had eroded from the North shore of the Isle of Thanet blocked the northern end of the Wantsum Channel. Sandwich reached its zenith in the thirteenth century, but with

continued siltation due to the longshore drift was in decline by the sixteenth century. The last straw for the port was the wrecking in 1561 of a large ship belonging to the Pope in the entrance to the Stour. She defied all efforts to remove her and trapped the drifting sands, creating a dangerous bar across the estuary. Today Sandwich lies some two miles from the sea and four by the windings of the river.

The tortuous route by which the tidal Stour found its way to the sea aggravated the discharge of floodwater to the sea and in 1776 a flood relief channel known as the Stonar Cut was made across the neck of the hairpin bend.

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HYDROLOGY

Both the Great Stour and the East Stour originate on the Weald Clay which is the oldest geological formation in the catchment. In consequence, the upper reaches are characteristically flashy; run-off is rapid with high peak flows. The NRA measures flows on both tributaries and measures main river flow seven km below Ashford at Wye Gauging Station where the flow from the Weald Clay and Lower Greensand is reinforced by the discharge from Ashford Sewage Treatment Works.

The flow characteristics change as the river enters the North Downs where recharge from the chalk springs gives the middle reaches typical chalk stream characteristics. Summer and winter flows are less extreme and water temperatures less variable between the seasons. The chalk flow contribution is measured at Horton Gauging Station.

Three kilometers below Canterbury an electro-magnetic gauging station at Vauxhall Bridge measures the combined flow of the main river and the discharge from Canterbury Sewage Treatment Works.

The main abstraction from the Great Stour is at Plucks Gutter where Southern Water Services Ltd takes river water for public supply. Recent proposals for a reservoir in the Broad Oak Valley have been under consideration since 1978, the site having originally been identified as suitable for a reservoir in 1945. The NRA is the licensing authority for impoundments and abstractions associated with reservoir schemes. In considering applications the NRA takes into account the effects on the aquatic environment and whether existing resources are being used effectively and with minimum wastage.

Nearly sixty agricultural users are licensed by the NRA to take water from the river, mainly on the Stour Marshes. Most licences are conditional and specify that water may only be taken when river flows at Plucks Gutter are adequate. As flows fall below 170 Ml/d, progressively more licence holders are required to stop abstracting, until at 145 Ml/d all conditional licence holders must cease taking water. The NRA considers this to be the minimum desirable flow for the protection of water quality and aquatic wildlife.

The Little Stour which enters the main river at Plucks Gutter is in its upper reaches an ephemeral stream, known as the Nailbourne Stream. Folklore is quite categorical on the subject of such Bournes; they rise to pressage a year of woe! In reality these are chalk streams fed by springs which flow when

the water table is sufficiently high to supply them, and which fade when the water table falls. In other parts of the region, and because of their seasonal nature, such streams are known as winterbournes.

In addition to measuring river flows, the Resources Department of the NRA measures rainfall and the levels of underground waters. There are twenty-six rain gauges in the catchment and three weather stations. The groundwater lays in three principal aquifers; the Lower Greensand, the Chalk and the Lower London Tertiaries.

WATER QUALITY

The character and quality of the non-tidal reaches of the Stour catchment are largely dictated by the underlying geology and by the amount and quality of sewage and industrial effluents discharged to them.

The populations of Ashford and Canterbury have increased in recent years as have those of the smaller towns and villages. This has resulted in discharges of sewage being concentrated at a number of points in the catchment. The NRA sets stringent limits on the strength and quantity of these discharges to ensure that river water quality is maintained.

Above Ashford the resilient springs of the Greensand and Chalk enhance the river's ability to absorb sewage effluents, resulting in a quality suitable for high class game and coarse fisheries (Class 1B). In Ashford, some 16,000 m³/d of sewage effluent are discharged to the river. For 6 km below the town the river quality objective is Class 2 (suitable for reasonably good coarse fisheries).

Once the Great Stour enters the North Downs near Wye its quality immediately improves as the cool, clear waters of the chalk springs augment the river. Between Wye and Godmersham the river quality objective is Class 1B and thereafter Class 1A (water of high quality, suitable for potable supply abstraction, game and other high class fisheries).

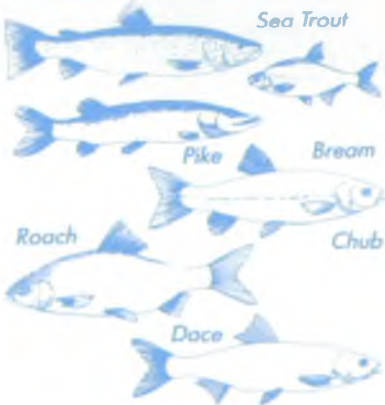
Godmersham church



Above Canterbury the river receives a number of small discharges of sewage effluent and a substantial discharge of treated papermill effluent. The water quality objective through Canterbury is set at Class 2. The high quality and large volume of sewage effluent from the modern sewage treatment works (16,000 m³/d) allows the river to exceed its objective and Class 1B is achieved for most of the year.

The tidal Stour receives additional quantities of sewage effluent and a substantial discharge of industrial effluent from the pharmaceutical industry. Water quality in the estuary as far as Sandwich is good, and thereafter fair down to the sea at Pegwell Bay.

In the future, additional sewage effluent from Ramsgate, Sandwich and Herne Bay could be diverted to the river. The additional flow could be of great benefit to the river and increase the amounts of water available for abstraction to potable supply. The NRA will determine consent conditions for these discharges to ensure that river water quality is preserved and that the effluents are used to the benefit of the river and the community.



FISHERIES

Fishing rights on the river have been jealously protected since time immemorial and the rights enjoyed today by the Canterbury and District Angling Association, under the terms of a lease from the Fordwich United Charities, date back to a Charter of King Canute of 1023. A copy of this can still be found in Canterbury Cathedral Library. As recently as 1984, these exclusive rights to the fishery between Fordwich and Plucks Gutter were upheld in the County Court. The right extends over bankside properties as well as the mooring of boats.

The excellence of the "Fordwich trouts" is acclaimed in documents from the thirteenth century and from the description of the fish, they were undoubtedly sea trout. In the seventeenth century a fish weir was operated at Fordwich. The town sergeant placed fixed nets across the river attached to piles. The fish taken each day were

delivered to whoever "owned the turn". The dignitaries sharing the privilege included the Mayor, the Lord Warden, the Archbishop of Canterbury and various members of the aristocracy and officialdom.

The Stour is still widely acknowledged as a quality fishery for both coarse and game fish, especially in the reaches above Canterbury where the river passes through the chalk. The NRA has a programme to install fish passes to help sea trout and the occasional salmon past obstructions on the river. Passes due for completion include those at Barton Mill and Kingsmead in Canterbury. Future passes are planned for Abbot's Mill (also in Canterbury) and for Chartham Mill.

Coarse fishing is concentrated below Canterbury and Fordwich where the major species include roach, bream and pike. In the past fish biomasses below Canterbury were artificially high due to the fertilising effects of the sewage effluent. Extensive improvements to the treatment of the City's sewage have resulted in a greatly improved effluent. Fish stocks have since stabilised at a more natural level with the appearance of some of the more sensitive species such as dace and chub.

FLOOD DEFENCE

The NRA is responsible for protecting people and property from flooding. Its responsibilities start downstream of Burnt Mill on the Great Stour and downstream of the A20 trunk road on the East Stour and continue through the tidal reaches to Pegwell Bay. Annual maintenance comprises weedcutting and debris removal from the river bed. At intervals between 1 in 10 to 1 in 25 years the river bed is dredged to remove silt. This is usually done by hydraulic excavator and the spoil is left on the banks of the river for about a year to dry out. The spoil is then spread thinly by a bulldozer over the adjacent fields. The whole dredging



St Radigans

and weedcutting process is done in liaison with various conservation bodies to preserve wildlife and the flora and fauna associated with the river.

On a number of occasions in recent years, heavy rainfall in the Ashford area has caused widespread flooding of both rural and urban areas. Flood water from the East Stour and to a lesser extent the Great Stour, has resulted in flooding of industrial premises as well as residential ones in Ashford. To alleviate these problems, Rofe Kennard and Lapworth, who are the National Rivers Authority's Consulting Engineers, have designed flood storage reservoirs for both the East Stour and the Great Stour.

A new earthen barrier across each river now regulates the amount of floodwater passing downstream to Ashford. Some of the run-off from heavy rainfall is held back in temporary lakes behind the barriers whenever the flows exceed the channel capacities through the town. A "hydrobrake" on each stream outlet releases the water from the temporary lakes at a controlled rate.



Installing the Hydro-Brake at the Aldington flood alleviation reservoir.

On the East Stour at Aldington, the scheme will give particular benefit to the new road system in the South East sector of the town and to the village of Mersham. The flood storage area is sufficiently large to allow for the possible widening of the Ashford-Folkestone railway in connection with the Channel Tunnel railway link. To the West of Ashford the storage area for the Great Stour is sited at Hothfield.

The £4 million scheme was jointly financed by the National Rivers Authority, Kent County Council, Ashford Borough Council and the Ministry of Agriculture, Fisheries and Food.

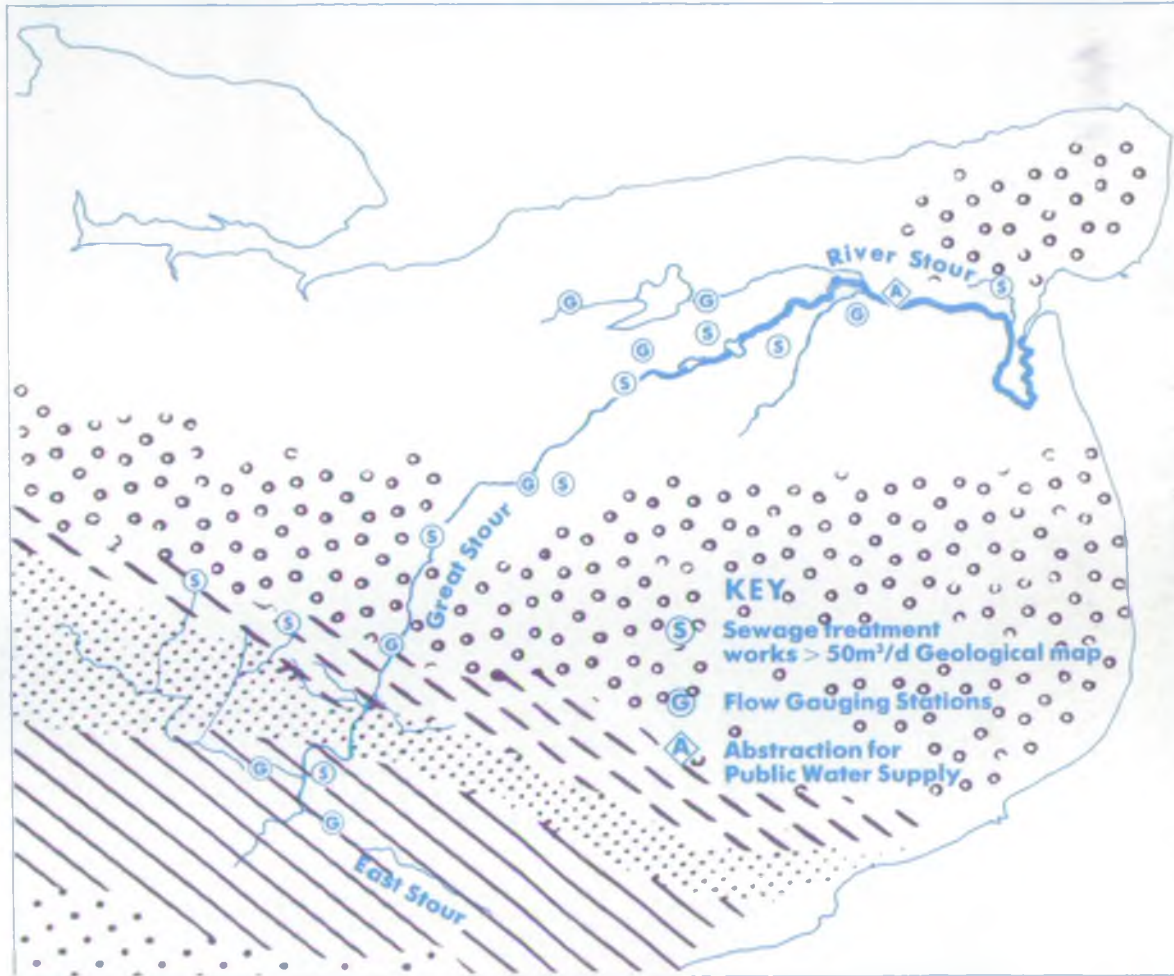
The only other river control structure on the Stour which the NRA maintains and operates is on the Stonar Cut. This structure was built in 1776 to control flows through a man-made river bed cut between the River Stour at Richborough and Sandwich Haven. The work was done under an Act of Parliament and enacted by King George III. It made provision that under circumstances of high flows in the River Stour, the Stonar Cut control structure can be opened

to allow flows to pass through the "short cut" to the sea instead of having to pass through the Sandwich loop. The effect of opening the Cut is to improve the flood protection and land drainage of the lands known as General Valleys which abut the tidal reaches of the river.

In the alluvial plain, agriculture is particularly important and since the 1060s various land drainage schemes have been designed to improve the productivity of agri-

cultural land. Various pumping stations at Minster, Plucks Gutter, Sarre, West Stourmouth, Gosshall and North Poulders lift water from the drained marshes into the tidal Stour. In summer months however most of the NRA work is feeding water from the Stour through sluices into the marshes to irrigate crops.

A speed limit of 6 knots along the tidal section is enforced by the NRA although it is not the Navigation Authority for the Stour.



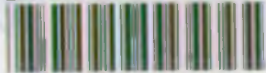
References

Goodsall, R H (1953) "The Kentish Stour" Rochester Press.
 Goodsall, R H (1968) "A Second Kentish Patchwork" Stedehill Publications.
 McKenzie, M "An Account of the River Stour in Kent" 1776.

Ministry of Housing and Local Government (1964) "Kent Rivers - Hydrological Survey" HMSO.
 St John Parker, M "A River Plan for Canterbury" Country Life, 31st August 1967.

McKenzie, M "An Act to enable the Commissioners of Sewers for several limits in the Eastern Parts of the County of Kent, more effectually to drain and improve the Lands and Grounds with the General Vallies".

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