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# THE CUCKMERE RIVER



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# NRA

*National Rivers Authority*

*Southern Region*

*Guardians of the Water Environment*

ENVIRONMENT AGENCY



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# THE CUCKMERE RIVER

## COURSE

The many rivulets which form the headwaters of the Cuckmere River rise 20 miles from the coast in the Heathfield ridgeway. From this southern ridge of the high Weald, some 130 metres above sea level, streamlets combine to form the major headstreams.

The true source of the Cuckmere rises in the north of Heathfield Park, just below the ridge road. It feeds the lakes of the park and then flows south.

The name Cuckmere is a Saxon word meaning "fast flowing water" perhaps reflecting that in its 7 kilometres, the river falls 100 metres. It collects first the Flutterbrook from the east and next the Waldron Gill from Horam and Vines Cross to the west. The river then hooks westward, drawing towards its principal tributary, the Bull



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Heathfield Park



Vines Cross sewage treatment works



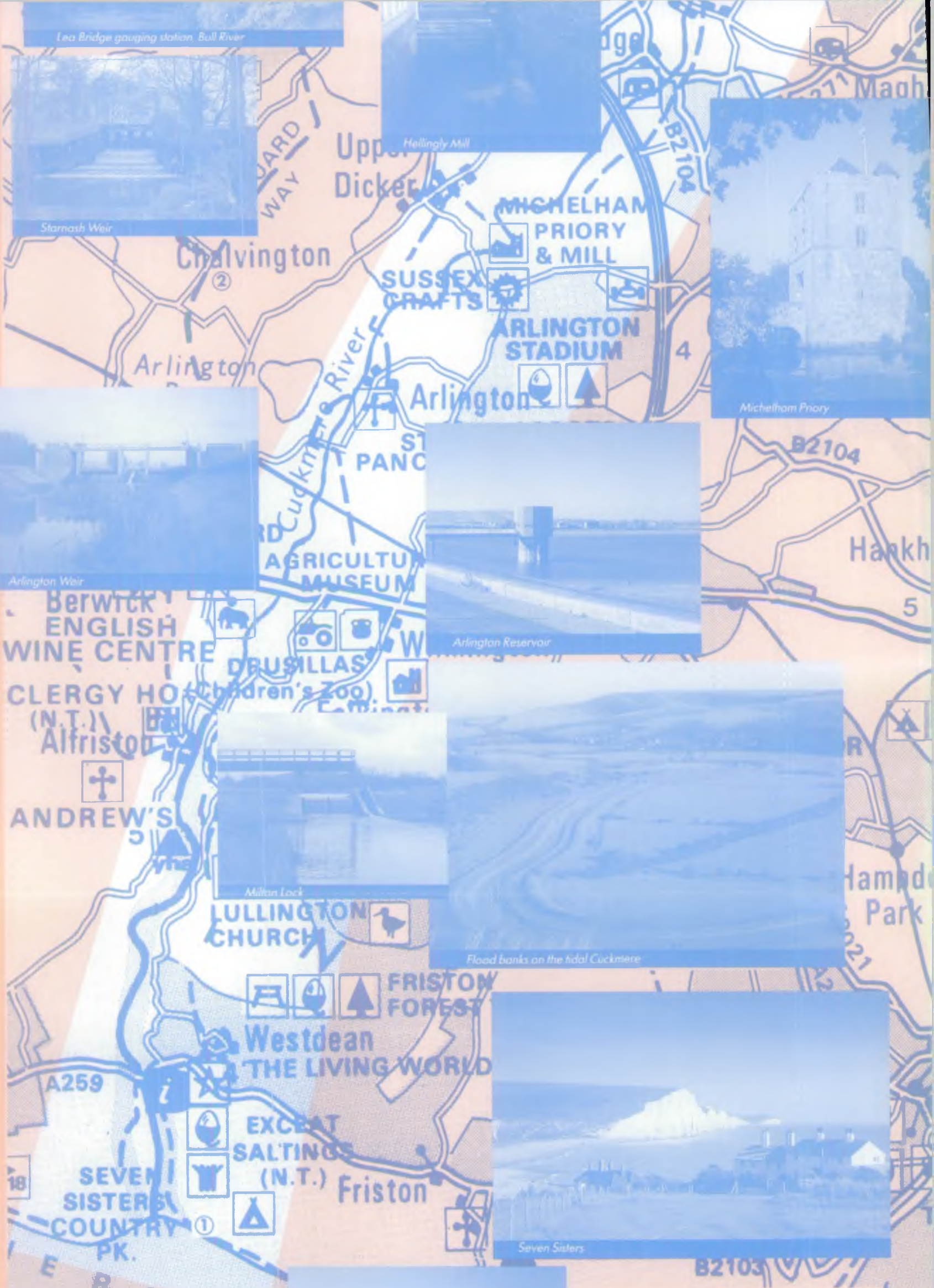


scenically beautiful area around Cross in Hand. Draining from the light sandy soils of the north, it flows southwards to the stiffer Wealden clay, collecting the Darn Stream, the Possingworth Stream and the Chiddingly Stream before joining the main stream of the Cuckmere at Hellingly.

From the high Wealden forest and the pastoral countryside of the low Weald, the river heads towards the gap it has carved through the South Downs. At Upper Dicker, part of the river is diverted to form a 6½ acre moat, one of the largest in England, at Michelham Priory (1229). At Arlington, the river is again diverted from its old course, where meanders are now occupied by a 120 acre bankside reservoir which supplies drinking water for the Eastbourne area.

The river valley through the South Downs is dominated on its east bank by the Long Man of Wilmington, a 231 ft tall figure, possibly dating from the 6th Century, cut into the chalk.

Below the present tidal limit at Milton Lock, the valley has been subjected to much embanking and drainage ditching. The mouth of the river at Exceat was only determined in recent times, though the word Exe is probably a pre-Saxon name for Cuckmere. Over the centuries, longshore drift (the tendency for shingle to be driven from west to east by the prevailing south west winds) had forced the mouth of the river eastwards. The shingle bar formed by the drift forced the river against the first of the Seven Sisters until it blocked the mouth. The river was then obliged to break through at a new point and spit formation began again. In 1946, man intervened. A straight cut was made to bypass the meanders of the tidal river. This lessened flooding in the valley and gave the river more strength to combat deposition. The banks of the new river mouth were secured by artificial embankments.



- ① SOUTHDOWNS WAY
- ② VANGUARD WAY
- ③ WEALD WAY

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# HISTORY

The headstreams of the river are characteristically Wealden, discoloured by the vivid orange tinge of iron. The valleys of the catchment are studded with iron sites, marked by abandoned Hammer ponds and disused mills, testimony to an industry long forgotten. Names such as Furnace Lane, Boring House Farm, Cinderford Lane and Steel Forge Farm are a lasting reminder of the ancient iron industry which brought prosperity to the area and reached its peak in Tudor times.

Iron Age man first extracted iron ore on the fringes of the Weald and used the bloomery process to create metal. The fast flowing streams provided water to cool tools and the solid mass of iron "bloom". The Romans exploited Wealden iron deposits for about 200 years on a highly organised scale, probably under the control of the fleet. Large amounts were exported across the English Channel.

The early bloomeries consisted of a primitive furnace made of a clay walled mound of iron and charcoal. The draught was supplied by bellows. The same process was used sporadically over a thousand years until the introduction of the blast furnace from France revolutionised the industry. This process produced cast iron which could then be forged into wrought iron. Water power was essential to drive separate water wheels for the bellows and for the forging hammer. The steep Wealden streams proved ideal for damming to create a head of water. The surrounding forest provided the fuel.

# GEOLOGY AND HYDROLOGY

The overall shape of the catchment is quite distinctive, being extremely narrow in relation to its length and its geological cover shows considerable variety. Its area to Sherman Bridge is 137.7 sq km. In its course to the sea, the river traverses an almost complete cross-section of Wealden geology from Ashdown Sandstone through Weald Clay to chalk. Hastings beds cover some 65% of the area with Ashdown Sands predominating and accounting for almost half of the outcrop. In contrast the middle reaches of the catchment are floored by Weald Clay which accounts for a further 22% of the total area, with small tracts of Upper and Lower Greensand, Gault Clay and Chalk making up the remainder. Only a very small proportion (2%) of the area lies under urban development, and with woodland accounting for a further 18%, open land predom-

inates to the extent of some 80% of the catchment.

The impermeable clay of the Weald dictates the flashy character of the river, it responds quickly to rainfall which runs over the surface of the clay. The base flow is from the springs of the Ashdown sands, but these are nowhere near as prolific as the chalk springs of Hampshire and the South Downs which give their streams stability of flow and temperature. The extremes of flow on the Wealden streams may vary five-hundredfold between summer and winter. As is common in areas of Hastings Beds, many of the headwater streams occupy quite deep valleys and the streams themselves have carved steep-sided channels.

The overall amplitude of inland relief is of the order of 180 metres with the downland escarpment which forms the southern boundary of the catchment providing an additional relief feature of up to 230 metres.

The catchment has been gauged continuously at Sherman Bridge since 1959 and this forms the long term flow record for the river. Continuous measurements are also made on the headwaters near Cowbeech and on the Bull River at Lealands near Hellingly which is the main tributary. The two sites have continuous records since 1967 and 1983 respectively.

The average flow of the river at Sherman Bridge over the period of the records is 1.5m<sup>3</sup>/sec.

Really long-term rainfall data is lacking for the catchment but the records that are available suggest a catchment mean of some 490mm.

Flow and rainfall information enables the NRA to regulate the amount of water abstracted from the river, through a licensing system. This ensures that river water can be put to effective use for domestic consumption and agriculture without harm to the river, and the wildlife and fishes associated with it.

At Sheepwash Bridge, just north of Cowbeech, an abstraction licence allows water from the underlying rocks to be pumped into the Cuckmere River and to be abstracted downstream at Arlington where it is treated to provide drinking water. This is the largest single abstraction on the river. A

Checking water quality at Arlington



condition of the licence is that the flow below the abstraction must not be allowed to fall below 4.543 megalitres/day (1mgd) in summer and 9.086 megalitres per day (2mgd) in winter. Other abstractions on the river are typically small.

# WATER QUALITY

The National Rivers Authority sets an objective that the Cuckmere River should be of good quality and suitable for high class game and coarse fisheries (Class 1B) above Sherman Bridge, and suitable for reasonably good coarse fisheries (Class 2) in the downstream section. The objective for the Waldron Gill between Vines Cross and its confluence with the Cuckmere is also Class 2. These are known as Environmental Quality Objectives (EQOs) and their particular importance on the Cuckmere River is to ensure that water abstracted at Arlington for domestic consumption is of high quality. To ensure that the river water satisfies its objectives, the Authority sets limits on all permitted discharges to the river, restricting the strength and quantity of effluents. These are known as consent conditions.

In the main, the river runs through rural countryside and small villages which have remained largely unchanged since being listed in the Domesday Book. The only major urban developments are Horam and Heathfield and the only significant industry is cider making at Horam. The waste water from these towns is routed into Vines Cross sewage treatment works, recently enlarged to cope with heavy development in the area. There are a number of sewage treatment works, both Water Authority and private which discharge into the river, but stringent consent conditions ensure that the river still supports a high quality fishery.

Unlike the cool chalk streams of Hampshire with water springing from deep underground reserves, the Wealden rivers are low and warm in summer. The high temperatures reduce the ability of the water to carry oxygen, leaving the river with a limited capacity to absorb pollution. Agricultural pollution is a constant threat, particularly in the low Weald where marginal farmland is devoted primarily to livestock farming. Water Quality Officers give high priority to farm inspections and to advising farmers on the safe disposal of farm waste.

# FISHERIES

The Cuckmere River supports a run of exceptional sea trout with

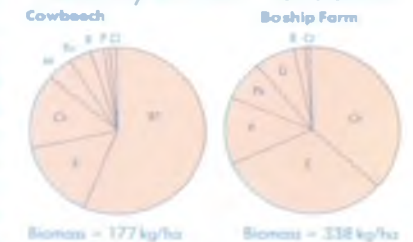
an average weight of 2-2.5 kg (4½-5 lbs) and some fish reaching sizes in excess of 6 kg. The sea trout spawn in the gravels of the northern tributaries in January and February and the young or parr spend about two years in the head streams. At a size of approximately 18 cms, the parr adjust their physiology in preparation for sea water, and turning a silvery colour, migrate to sea. The rich feeding at sea enables them to grow rapidly until, as mature fish they return to the river to join the winter spawning migration.

Automatic weir and fish pass



At the tidal limit, the Authority has installed a fishway to help sea trout past the automatic weir which separates the freshwater river from the tidal section. The fishway is a sloping trough with baffles which reduce the velocity of the flow so that fish can swim easily against it. Another fish pass was provided in 1969 at Arlington by the Eastbourne Water Company to assist fish over the weir constructed in association with the water works and reservoir.

Community structure - fish biomass



Key  
BT Brown trout, Bu Bullhead, Ch Chub, D Dace, E Eels, M Minnows, O Other, P Perch, Pk Pike, R Roach



In addition to sea trout, resident brown trout populations are found in the headwaters. The acid,



iron rich streams support characteristically small but highly coloured wild trout.

The Cuckmere River also supports a high quality coarse fishery. In the steeper streams above the confluence of the Bull River and the Cuckmere River, chub and minnows are the characteristic species. Dace and perch appear in the middle reaches and in the lower, slow flowing reaches, still-water species such as bream and carp predominate.

## FLOOD DEFENCE

Flood defence activities are concentrated mainly in the middle and lower reaches, though in the steep upper catchment there are several fixed weirs which must be maintained by the NRA or private owners. At Upper Dicker, a sluice gate owned by the NRA operates automatically in response to flow. An adjustable weir at Sessingham can be lowered for winter flows and raised to retain summer levels.

At the tidal limit, an automatic weir rises and falls in response to flow and also prevents high tides flooding into the freshwater section of the river. Additionally, it provides a head to supply the Freshwater Stream. This stream flowing parallel to the Cuckmere River on its way to the sea, provides drinking water for cattle in the water meadows of the flood plain.

A great deal of land reclamation has taken place throughout the valley and the extensive flooding of the past has been virtually eliminated. The NRA maintains the tidal flood banks and is responsible for 20 tidal flaps which protect streams and land drainage ditches from the ingress of tidal water yet allow them to discharge at low tide.

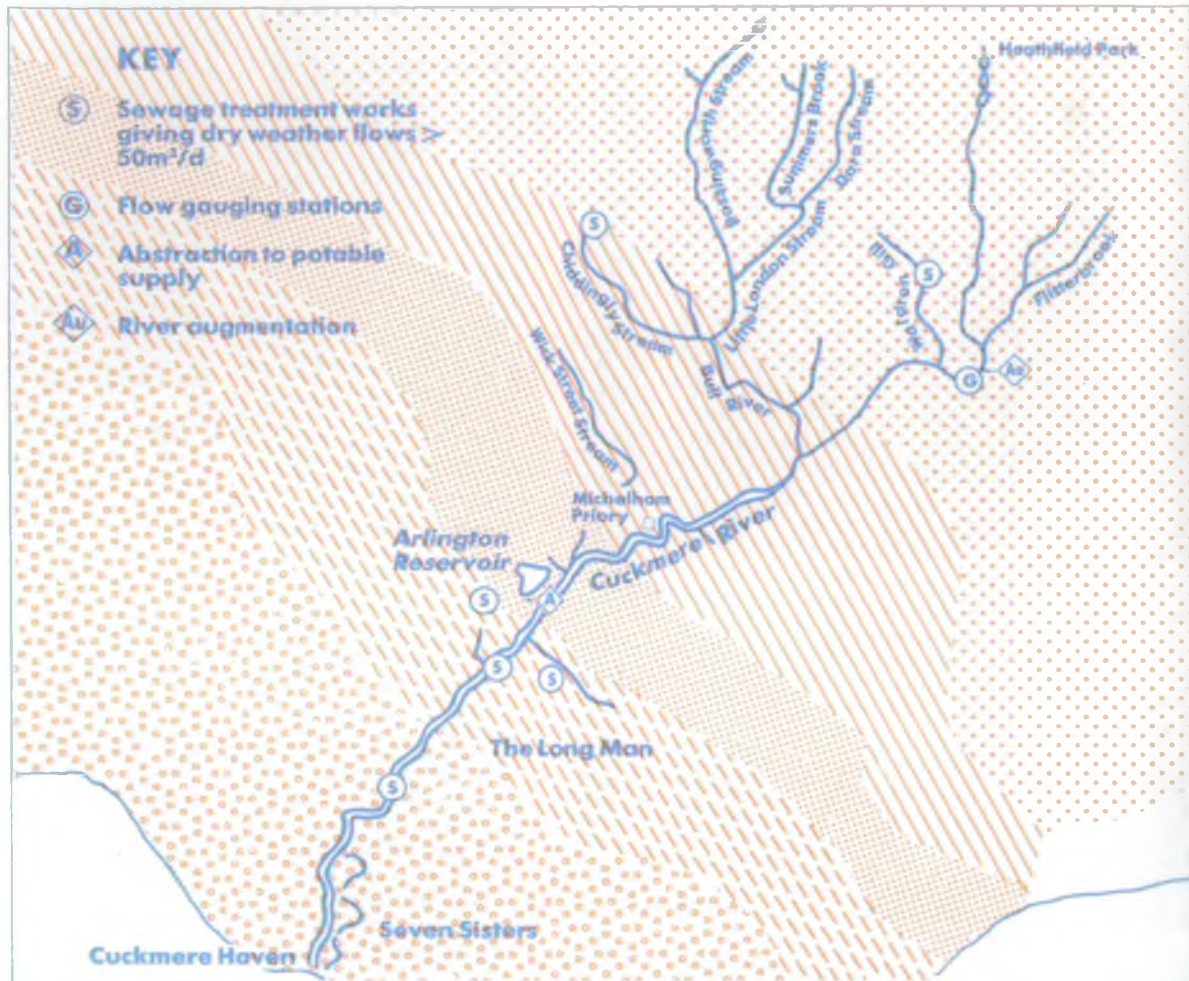
At Exceat, the constantly shifting shingle requires regular attention. It is cleared from the river mouth to replenish the shingle beach to the west which acts as a cushion against winter storms. A groyne system is maintained on this part of the beach to retain the shingle.

## Further Reading

McCarthy, E & M (1981) *The Cuckmere*. Lindel Publishing Co., Seaford

*Survey of Rivers and Coast in the South-East Region - The Rivers of Sussex.*

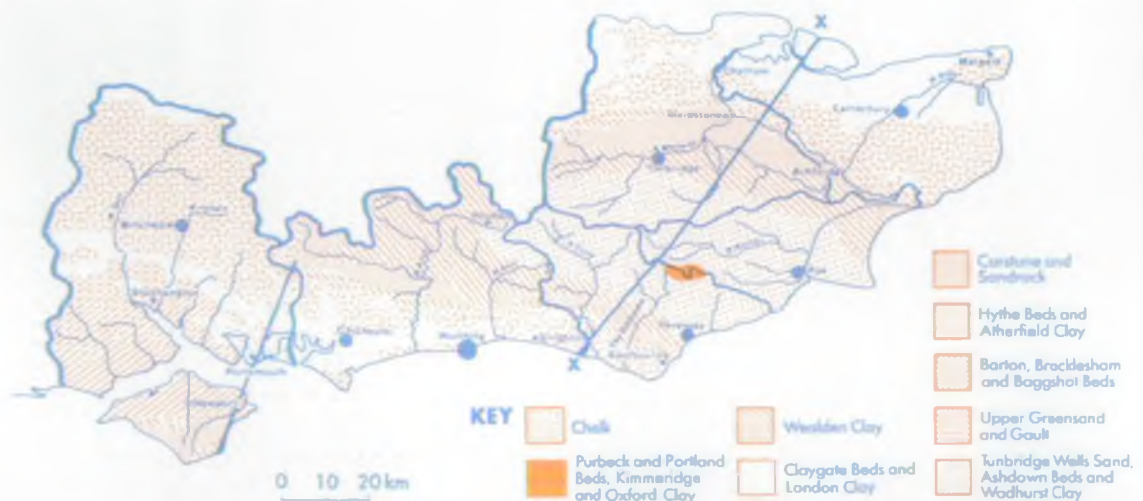
Nature Conservancy Council, Zealds, Church Street, Wye, Ashford, Kent TN25 5BW.



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



Horizontal Scale about 1:250,000. Vertical Scale about ten times the Horizontal



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