Background information on the Cuckmere Valley

The Past

The story of the Cuckmere valley begins at the end of the last Ice Age, when melting glaciers carried sand and gravel across the valley floor and deposited them on the underlying chalk. The material carried down scoured out the valley and was carried out to sea. Traces of this material can be seen today on Seaford Head, where the white chalk cliff is overlaid with yellow sandstone.

As the earth’s temperature rose, plants grew and forests stretched across the tops of the Downs and through the river valleys. Above the glacial deposits in the Cuckmere valley are probably up to 10 metres of peat formed from the decay of largely alder swamp vegetation that existed between 4000 and 1200 B.C.

Above this there could be up to 8 metres of alluvial silts and clays deposited by the river.

500 years ago, a minor rise in sea levels produced a shallow tidal estuary where the river is today and salt marsh was formed across the valley floor. The deposits from the marsh can be seen in the brown material in the banks of the river, which has formed a brackish water silt or alluvium. It is still possible to see the traces of the former creeks, which would have wound their way across the salt marsh as they do in modern salt marshes.

The Cuckmere River Today

The Source of the Cuckmere is Heathfield, twenty miles to the North on the Weald.

The valley has been drained since Tudor times and man-made ditches can be found along the whole valley floor.

The building of a canal to aid navigation up to Alfriston in 1846 has also effectively drained the valley. The canal carries water from the mouth of the river up and under Exceat Bridge. When it was constructed a raised bank was built cutting off the flow of water through the meanders and they are now filled through sluice gates. Because water is now channelled upstream through the canal, the meanders no longer flood and their flow has slowed with the result that they are slowly silting up.

There is a sharp contrast between the wide, shallow, slow moving meanders with their shallow banks and the deep, straight, fast flowing, embanked channel of the canal.

Salt marsh has formed along the banks of the canal where silt has been deposited by the river and then colonised by flowering plants.
Predicted sea level rises in the future could again cause flooding in the valley and the creation of new salt marsh.

The Cuckmere River flows out to sea at Cuckmere Haven. The mouth of river has changed its position. It once flowed out to sea on the eastern side of the valley, forced against the first of the Seven Sisters by a shingle bar formed by long shore drift. When the mouth became block the river moved westwards towards Seaford Head. A training wall now prevents the existing mouth from silting up with shingle. The river meets the sea against a background of chalk white cliffs and the grey of a shingle beach at the end of the most beautiful river valley in Sussex.

**The Seven Sisters Coastline**

The cliffs at the Seven Sisters Country Park are composed of sedimentary chalk limestone. Chalk is made up of the calcite remains (or coccoliths) of marine algae which died and fell to the bottom of the sea to be reworked by burrowing animals and currents. It also contains marine fossils including bivalves, ammonites and sea urchins. The cliffs at the Seven Sisters Country Park were formed between 60 and 130 million years ago during the Upper Cretaceous Period. During this period the dinosaurs died out and the evolution of birds as we know them began. They were formed over a period of 20 to 30 million years, in warm, shallow seas at a time when England was joined to Europe and the climate was similar to that of our modern day Sahara desert. The formation of the chalk took between 20 and 30 million years.

50 million years ago major earth movements occurred as the African Tectonic Plate moved northwards and collided with the European plate, pushing up the Alps, Pyrenees, and the Downs. The latter formed a large dome, which has been eroded by water, leaving only the rim of the South and North Downs still standing and, sandwiched between them, the gault clay of the Weald. At the Seven Sisters the chalk is exposed.

The South East of England has 68% of the total extent of coastal chalk exposures in Great Britain and 40% of European. Chalk exposures stretch for 77 km in the Southeast. Beachy Head to Seaford and Newhaven to Brighton account for 22 km of this.

Bands of tabular flint can be seen in the chalk face of the cliffs. They normally run parallel to the bedding of the chalk although flint can be seen in vertical and oblique cracks. Flint is a compact, hard, brittle mineral, brown-black or grey in colour, consisting of fine grained silica (silicon oxide) similar to quartz. It was probably formed from the silica spines of fossilised remains of giant sponges, which congealed together, and following a chemical reaction with sulphur from algae floating in the sea, hardened to make flint.
Occasionally sea urchins can be found in which the original calcite shell and soft parts have been replaced by silica producing a flint fossil.

**Seaford Head**

The cliffs to the west of the river mouth show clearly where chalk has been overlaid with a glacial cap of sandstone and gravel. This was deposited by melt water moving south and out to sea as temperatures rose at the end of the last Ice Age.

Coastguard cottages perched on the edge of the cliff are in imminent danger of falling into the sea. Photographs of a hundred years ago portray them with long back gardens overlooking the sea.

**The Beach**

The beach at Cuckmere Haven is post glacial. The beach was formed by material that was washed down and deposited by melt water moving south and out to sea as temperatures rose at the end of the last Ice Age.

The pebbles found here are either white or grey chalk and flint or orange brown sandstone from Seaford Head.

**How man has impacted on the coastline at the Seven Sisters**

The cliffs at Cuckmere Haven are being allowed to erode naturally. Apart from a small area beneath the Coast Guard Cottages there are no sea defences in place along this stretch of the coastline.

**How will the coastline change in the future?**

It has been predicted that there will be a rise of 1.5 degree C to the year 2100, which will result in a sea level rise of .5 metre. There will also be an increase in storminess and rainfall. Along the South East the rate of sea level rise is amongst the highest in the U.K. This is partially because of global warming but also because of the lowering of the land. Britain is tilting down to the South East as it readjusts from conditions existing during the last Ice Age. The rate of relative sea level rise is 6mm per year. If sea levels rise as predicted the Cuckmere valley could become permanently flooded resulting in the formation of salt-marsh up to the A259.