

Grid reference [TM 356 395]

The tough, cylindrical walls of Bawdsey's Martello Tower were built to defend Suffolk against seaborne attack in the Napoleonic Wars. If it were not for hard rock defences on the beach the Tower would already have fallen into the sea.

In recent years, the soft coastal sands and clays at East Lane beach have been rapidly eroding; for example some 17 m (56 ft) of cliff was lost here in 2005. The Tower is standing on a solidly defended promontory, while the adjacent beach to the south has been left to bear the brunt of North Sea storms. This exposes some interesting geology.

The London Clay is best seen at low tide, where the blue-grey, silty clay forms a wave-cut platform on the foreshore. It was deposited in a warm sea in tropical conditions during the Eocene period, about 50 million years ago, when Britain lay much closer to the Equator. The water is thought to have been between 200 and 500 m (656 and 1640 ft) deep. Pieces of fossil wood can readily be found, presumably washed out to sea from forests and mangrove swamps on the Eocene mainland. Diligent searching and sieving will reveal fossil fish, bird and reptile bones and teeth in the clay, and also plant remains including fruits and seeds.

The London Clay also extends up into the cliff, where it is overlain by fossil-rich sands and gravels of the Red Crag. The Crag was deposited on an eroded seabed of London Clay about 2.55 million years ago. It contains abundant fossil shells and occasionally mammal remains such as whale bones and even rhinoceros teeth. There are many brown, phosphate-rich mudstone pebbles; these were known as coprolites, and exploited commercially in Suffolk in the 19th century as a source of fertiliser. The grey-brown, sandy deposit at the top of the cliff is a glacial till, deposited by the Anglian ice sheet about 450,000 years ago. At some time during the Ice Age the boundary between the Crag and the London Clay was distorted into a series of spectacular undulations, caused by ground-ice activity in the subsoil. See photo on page 3.