

**GLA 45: Bedfords Park, Recommended RIGS**

London Borough of Havering, Bedfords Park entrance TQ 517 930, Visitor Centre TQ 519 922

Ownership: Local Authority. Public open space.

**Geology of the Havering Ridge**

The lofty village of Havering-atte-Bower is the highest point of a ridge of high ground that runs across the north of Havering borough. It extends from Havering Country Park in the west, through Havering-atte-Bower, with a spur extending south-east into Bedfords Park. The geology of the ridge is similar to that of other high points in Essex such as Hainault Forest (GLA 15), High Beach and the Langdon Hills and consists of London Clay overlain by the sandy clay of the Claygate Beds and in turn overlain by Bagshot Sand. These rocks were laid down as sediment on the floor of the London Clay sea some 50 million years ago, the increasingly sandy nature of the strata demonstrating that the sea was slowly becoming shallower. The highest part of the ridge is capped by a substantial spread of gravel (sometimes called 'pebble gravel' or 'Stanmore Gravel') which also occurs at other high points in Essex, but its origin has puzzled geologists for years. It is now thought to have been laid down probably about a million years ago by northward-flowing tributaries of the early River Thames at a time when the Thames flowed across north Essex and Suffolk. It is difficult to believe that Havering-atte-Bower, now one of the highest points in London, was once the floor of an ancient river valley. An alternative view is the Stanmore Gravel may be a marine deposit related to the Craggs of East Anglia, equally difficult to believe (BGS Special Memoir, p. 52). There is a small patch of the Stanmore Gravel within Bedfords Park but it is much more extensive on the high ground of Havering Country Park where the gravel is noticeable in the soil. It gives rise to birch, gorse and bracken in contrast to the heavier London Clay soil to the south which favours oak, hornbeam and bramble.

**The effects of the Ice Age**

During the coldest period of the Ice Age, about 450,000 years ago, the giant Anglian ice sheet spread south into Essex and left behind boulder clay or till. Patches of this distinctive deposit are present on the northern slopes of the ridge and on the high ground of Bedfords Park. The ice sheet brought with it a variety of rocks from all over the country and even as far away as Norway. As the ice retreated some of the rocks within it were washed away by rivers that eventually found their way into the new route of the Thames that was forced south through London by the ice sheet. The earliest of the Thames gravels, deposited as the Anglian ice sheet melted can be found close by at Marks Warren Quarry (GLA 37) near Romford. In June 2011, when members of the London Geodiversity Partnership and GeoEssex were visiting the Quarry, they discovered a boulder that had been found within the Black Park Gravel by the quarrymen. Subsequent examination of the boulder confirmed that it was a glacial erratic composed of an igneous rock, dolerite. The characteristics of the rock, which appears to be a quartz-hypersthene dolerite, indicate that it may well have been derived from the Great Whin Sill, a prominent scarp in Northumberland, much of which is composed of this rock type. If the petrology of the rock is confirmed, this boulder would be one of the furthest travelled, having been transported some 300 miles from its origin. Due to the kind efforts of the quarry operators, Brett Aggregates Ltd, the 0.9 tonne boulder was transported a few miles to the Visitor Centre at Bedford's Park where it is on public display<sup>2</sup>.

**Springs**

Springs are evident in many places where groundwater is thrown out at the junction of the Claygate Beds and the impervious London Clay beneath. This is noticeable in Bedfords Park where an area of marsh is fed by springs emerging from the hillside. Very often the geological unit that you are walking over can be deduced by the spring lines. Topography and vegetation provide other clues. Bedford Park is an excellent location to attempt to locate, from first principles, the 5 different lithological units to be found here.

**Visitor Centre**

The Visitor Centre is situated at over 90 m and affords spectacular views over Canary Wharf to Shooters Hill on the south side of the Thames and beyond into Kent. It is run by the Essex Wildlife Trust who have installed an interactive computer terminal describing the five different geological units in the area with a map of where they are located. The glacial boulder is placed outside at the view point. There is free parking, toilets and a snack bar ([www.essexwt.org.uk/reserves/bedfords-park](http://www.essexwt.org.uk/reserves/bedfords-park)).

**Whin Sill Boulder outside visitor centre**

Source: Essex Wildlife Trust



**Site Map**

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Source: London's foundations, page 205

