

SGI 10 Shooters Hill

Royal Borough of Greenwich

Shooters Hill

Grid reference: TQ 438 765

Solid Geology of London from Shooters Hill

Near the Red Lion (TQ 433 766) on Shooters Hill is a good vantage point to look down the hill, over Canary Wharf and beyond and to try to see how the geology beneath you relates to the wider area. In the foreground is the Blackheath plateau that stretches from Blackheath in the west to Erith in the east. It is called Blackheath from the rounded black pebble nature of this former London Clay 'Bottom Bed', currently known as the Blackheath Member of the Harwich Formation. Across the Thames, the ridge in the far distance and slightly to the right is Hampstead Heath with the Stanmore Ridge beyond, more to the left. Epping Forest ridge lies further to the east. All of these high points are underlain by the full thickness of the London Clay including the sandy/silty layers of the Claygate beds at the top (approx. 100m OD) and locally the younger Bagshot Sand above. At about 50 million years old Bagshot Sand is the youngest rock type of the 'solid' geology beneath London but is nowhere to be found to the south of the Thames in the London area. In north London the London Clay has proved an excellent medium for tunnelling which has given rise to the extensive Underground network, the first of its kind in the world. In southeast London earth movements over time have pushed up a ridge of older rocks to form what is known as the Greenwich Anticline. Younger rocks such as the London Clay have been eroded so that the older rocks lie near the surface in parts of the Greenwich area. For example, under the Thames Barrier Chalk is near the surface, and used to be quarried near Lewisham in the Ravensbourne Valley. The lack of London Clay is the reason why southeast London was traditionally served by only surface trains. With improved tunnelling techniques the Underground has recently been extended to the area.

Geology of Shooters Hill

Shooters Hill rises above the Blackheath plateau as a remnant of the former geology that once covered the area. It is underlain by the full depth of London Clay with the Claygate Beds towards the top of the hill. It is capped by sand and flint pebbles, which is the reason that it has not been eroded and a line of springs exists around the hill at the base of the pebbles. Similar pebble beds are found capping the highest hills across London and there is an argument on exactly when they were laid down and whether they were deposited on beaches or by earlier river courses. An estimate of two million years is the age often quoted but all we can say for sure is that it was sometime before the great ice sheet of the Anglian glaciations reached north London some 450,000 years ago.



Shooters Hill looking east from a high building in Deptford, September 2017.

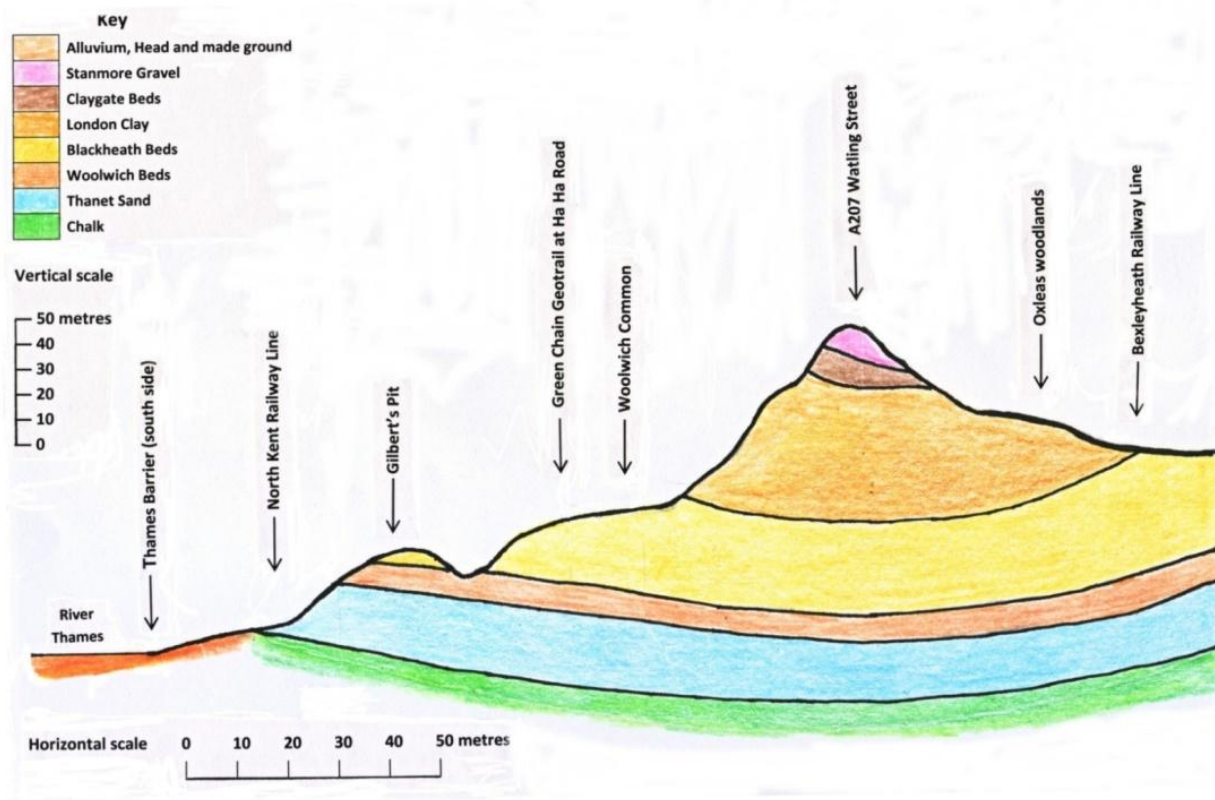
Photo: Laurie Baker

The origin of the gravels is a bit of an enigma. There is evidence that the Thames flowed to the north of London before the ice sheet came and the route seems to be through the Vale of St. Albans and out to the North Sea near Clacton. Extensive gravel in the Stanmore area of north London is probably a tributary flowing from the south. The gravel capping other hills at much the same height (about 130m) e.g. Hampstead Heath and Shooters Hill, has therefore also been termed 'Stanmore Gravel'. The nature of the clasts is comparable. It is hard to understand how these widely dispersed locations could have been linked which is why it has been suggested that this was once an ancient beach only 2 million years ago relating to the fossiliferous deposits of the Red Crag of the Suffolk and Essex coast. However, the gravels are more likely to have been

deposited by a number of different tributaries flowing north from the Weald to the Thames, across what is now the Thames Valley.

Springs on Shooters Hill

Springs rise at the base of the gravels and also at the junction between the Claygate Beds and London Clay. The hill forms the watershed between streams towards the Quaggy in the west and towards the Cray in the east. The Red Lion Inn had its own well, and on the other side of Shooters Hill at the entrance to Castle Woods there was a very welcome dipping well after a long climb from Deptford. These wells provided abundant good drinking water by tapping into sandy Claygate Beds and overlying Stanmore Gravel which cap the hill. As Shooters Hill is one of the highest points in London, pumping mains water up 130m was always difficult. A constant supply for the highest 300 houses was only achieved in 1910 by the building of the water tower at the top.



Section through Shooters Hill
(Laurie Baker)

An old mineral well on the north side of the hill used to be important as a famous spa. Its location has been traced to the garden of the erstwhile Eagle Public House, 78 Red Lion Lane. According to old maps the Eagle Tavern dates from about 1866 with the well beside a cottage in the garden. The well was first described in 1673. Although the well disappears from maps by 1888, the cottage remained until about 1924. The Eagle Tavern closed its doors in 2013 and has now been divided into residential apartments. The Mineral Well was sunk into the London Clay and the water is from a quite different source to the spring lines. Nearby boreholes show occasional thin sand layers within the clay. The mineral water, enriched in magnesium sulphate (Epsom Salt), by weathering of the London Clay, came from these sand layers. Several of the south London spas obtained 'purging waters' from a similar source. Further details can be found in Mather & Duffin, 2016 (see details below).

Access

Shooters Hill lies on the line of the old Roman Road, Watling Street now the A207. Bus routes 89, 244 and 486 go to the top of the hill; the 486 starts from North Greenwich Station (Jubilee Line).

Reference

Mather, J.D. & Duffin C.J. 2016. Nathaniel Hodges and the purging wells of Shooter's Hill. In: *Geology and Medicine: Historical Connections. Geological Society Special Publication 452.*