

SGI 8 Hanger Hill Park

London Borough of Ealing
Hanger Hill, Hillcrest Road, Ealing
Grid reference: TQ 1818 8198

Hanger Hill Park is a worthy site of geological interest as the public open space is underlain by three different geological strata. The park is laid out on a north-facing slope with the valley of the Brent between the park and the high ground of Horsenden Hill on the far side. Horsenden Hill has been designated a Locally Important Geological Site for similar geological strata that underlie Horsenden Hill. There are a few exposures on Horsenden Hill whereas the geology can only be gleaned by inference on Hanger Hill which is much more managed. North London has several hills providing an interesting landscape. The highest are Hampstead Heath and Harrow Hill with Barn Hill and Dollis Hill at slightly lower elevation. All these hills are capped with gravel which helps protect them from erosion. Rainwater percolates through the gravel and appears as a spring line with the underlying clay which erodes much more rapidly.

Black Park Gravel

The gravel underlying the top of Hanger Hill is the Black Park Gravel. This is the earliest of the gravels to be deposited by the River Thames following the great Anglian Ice Age that reached as far as North London 450,000 years ago, with evidence of glacial till extending as lobes into Finchley and Hornchurch. Prior to this most extensive of the ice advances, the Thames flowed further north through the Vale of St. Albans to reach the North Sea in the Clacton area. It was the ice that pushed the river south into more-or-less its present position as the glaciers melted at the ends of the ice sheet. Subsequent ice ages have also left their mark in a series of terraces bordering the present River Thames. The gravels capping the other hills mentioned above are older, Pre-Anglian gravels relating to former tributaries of the Thames flowing from the Weald across what is now the Thames Valley to join the former route in the Vale of St. Albans. All the gravels are predominantly formed of flint clasts originating from the hard grey layers within the chalk; some of them are rounded, implying they are reworked from earlier transport and deposition. The proportions of rounded pebbles and the minor exotics such as white vein quartz, Bunter pebbles and Lower Greensand chert help to characterise the differences between the various gravels. The Black Park Gravel contains all of these ingredients; the Lower Greensand chert will have come from the Weald to the south whereas the Bunter pebbles were derived from the north. They are present in the Pre-Anglian gravels but extremely rare in subsequent Thames gravels. The Black Park Gravel is associated with a number of other 'erratics' in deposits elsewhere, transported by the ice and subsequently washed into the gravels. In east London a boulder of dolerite was found within the gravel. This has now been placed in the Visitor Centre in Bedford's Park, Havering as it is believed to have originated from the Whin Sill in the north of England and has a story to tell. Elsewhere, at Swanscombe, these early Thames gravels are associated with rare fragments of human skull, dated at about 400,000 years ago.

Black Park Gravel underlies the woodland on the park extension on the east side of the Hanger Lane (North Circular Road). The dense undergrowth makes it difficult to find any exposures but just occasionally a few pebbles can be spotted amongst the roots of trees. Further evidence is provided by gullies orientated down the slope, originating from springs at the junction of the Black Park Gravel with the underlying Claygate Beds. In the eastern end of the park the origin is within the gardens bordering Hillcrest Road. The most prominent gully extends from the southern perimeter fence with the houses and continues down slope, to beyond the club hut for the Pitch and Putt course where the slope flattens out, dividing the course, right down to the northern perimeter of the park where it disappears underground. Further gullies can be seen at the west end of the park in the wooded area (Fox Wood).

To the west of Fox Lane there is now a sports field, artificially levelled when a former reservoir was backfilled. During the digging of the reservoir in 1887 Allen Brown describes the gravels: 'numerous boulders of small size have been found, some of which are striated' (i.e. scratched by glaciers). He goes on to list the types of boulders which included three varieties of granite, quartz, quartzite, veined greenstone, trap, Carboniferous Limestone, red sandstone, Upper Oolite, Forest Marble, Lower Greensand with glauconite, Bargate Stone, Chalk Rock, flint and Sarsen. As with the Whin Sin boulder, the implication is that many of these clasts were transported by ice and then washed into the Black Park Gravel as the ice melted. The Lower Greensand chert and the Bargate Stone came from the Weald to the south as tributaries of the Thames. Four years previously Brown found artefacts close by associated with the Black Park Gravel. Two hand axes in the

British Museum were identified by Juby in 2011 as J.A. Brown no 23 and 59. Four further implements reside in Gunnersbury Park Museum and the British Museum, all of them very abraded suggesting they may have been reworked from the Pre-Anglian gravels.

50 million year time gap

There is a time gap of nearly 50 million years from the base of the Black Park Gravel to the top of the London Clay. During this time Africa collided with Europe leaving just a small fragment of the once extensive Tethys Ocean that we recognise today in the Mediterranean Sea. In the UK we cannot boast the dramatic mountains of the Alps but the collision has produced a crumple that has raised up the layers of rock between the south of London and the English Channel (what we now call the Weald) and down-folded the younger rocks of the London Basin. The younger rocks have been eroded from the centre of the Weald to expose Jurassic rocks at the core. In the London Basin the London Clay is preserved.

Claygate Member of the London Clay Formation

At the top of the London Clay the silty nature of the layers has resulted in it being given the name Claygate Member, first described from Claygate to the southwest of London. It is thought to be a rather more near-shore facies than the London Clay proper with alternating layers of clay and silt as sea-levels fluctuated. Very often a spring line occurs at the base of these layers and also, sometimes from within the layers as well. Three small ponds opposite the entrance to the 'Pitch and Putt' are possibly spring-fed. These are all within the Claygate Beds, midway between the Black Park Gravel and the London Clay and are probably the result of water forced to the surface by one of the clay layers. At the northern edge of the park a spring marks the junction of the Claygate Member with the underlying clay-rich London Clay.

London Clay

The London Clay is termed 'blue clay' and at depth it does have a bluey tinge to the otherwise grey clay. We are more familiar with it near the surface where the iron within it has been oxidised to give the clay an orangey colour. No exposures were observed in Hanger Hill Park. It was formed between 55 and 50 million years ago in a moderately deep sea fed by large muddy rivers from somewhere in what we now term the Midlands. Fossils have been found in the London area, often old collections gathered when railways and roads were being excavated, but the best place to find them now is at Warden Point on the Isle of Sheppey. Wood is a common element, some of it heavily bored by the wood-boring bivalve *Teredo* (shipworm). Also common are seeds and fruits from land plants, washed in by the rivers and these give us the best clues about the environment at the time. *Nipa* palm is found today in places like Malaysia and indicates a climate that was wet and warm whilst *Magnolia* seeds indicate some sort of seasonality. At the time Britain lay at a similar latitude to Barcelona today and summer temperatures there now are similar to Malaysia. Other land-derived fossils are very occasional birds and mammals. Turtles and crocodiles are also present. More common are fully-marine molluscs, fish, sharks, crabs and lobsters.

Access

Open access from Hillcrest Road, Hanger Lane and Fox Lane. Parking in Hillcrest Road, off A406 Hanger Lane (except weekdays between 09.00 to 10.00, and 15.00 to 16.00, for permit holders only). There is a small car park (approx. 20 spaces) for visitors to the playing fields, to the west of Fox Lane. Hanger Lane tube station is approximately 15 minutes walk away. Buses 83, 112, PR1 run along Hanger Lane.



Small ponds near the base of the prominent gully on the east side of the park.

Photo: Ann Davidson

References

- Allen-Brown, J.1883. On probable glacial deposits, or evidence of the action of ice near Ealing, Middlesex. *Proceedings of the Geologists' Association* **8**:173-181.
- Allen-Brown, J.1887. Excursion to the Mount, Ealing and Horsington Hill. *Proceedings of the Geologists' Association* **10**:172-181.
- Juby, C. 2011. *London before London: Reconstructing a Palaeolithic Landscape*. PhD thesis, Royal Holloway, London University 'Whin Sill' boulder: www.londongeopartnership.org.uk/news.html (03/05/2012); Description www.londongeopartnership.org.uk/gla45.html
- Swanscombe Man: www.swanscombeheritagepark.co.uk