

SGI 17 New Cross Gate Cutting Nature Reserve

London Borough of Lewisham

Owned by Network Rail and managed by the London Wildlife Trust

New Cross Gate Cutting Nature Reserve

Grid reference: TQ 363 764 Access: TQ 363 762

The geological interest of the New Cross Gate Cutting Nature Reserve (also called Brockley Nature Reserve) arises from the historic landslide in 1841 that took place just two years after the railway opened, half a kilometre south of the then called New Cross (now New Cross Gate) Station.

From New Cross Gate the land rises steeply to the south which necessitated a long cutting all the way to Forest Hill, some four kilometres away. Previously the Croydon Canal had followed more or less the same route and was purchased by the Croydon Railway Company in July 1836 and closed to canal traffic a month later. The railway opened in 1839 with considerable cuttings in the London Clay along much of its length. At the landslide site within the Nature Reserve the cuttings were about 20m deep and cut at an angle of about 40 degrees. The beds are dipping at about two degrees to the east and a period of hot weather in 1840 followed by prolonged rainfall in 1841 caused the weathered surface of the London Clay to slip over the more competent 'blue' clay beneath. A description of the landslide still exists, written by the engineer for the railway, Charles Hutton Gregory:

'On Tuesday 2nd November, 1841, at about 8pm, a movement was observed in the...western slope of this cutting...: some of the clay, washed by the continuous heavy rain of that season into a semifluid, crept down towards the rails from the side of the slope which had previously been subject to frequent surface slipping. It was soon seen, that the stratum of yellow clay was in motion from top to bottom, and in the course of four hours, a mass containing about 50,000 cubic yards of clay, had separated itself from the hill, and had sunk down, so that the back of the slip rested in a self-formed basin in the slope, while the front had slipped forward on the glass-like surface of the blue clay, and had overwhelmed the line of railway, for a length of 120 yards and a depth of 10 feet or 12 feet, while large detached blocks of blue and yellow clay, had been forced up from below, and beetled over the lower part of the slip, ready to follow it.'

As the clay was cleared, more slipped and it took a large force 11 weeks hard work and the problem was only solved by cutting back the slope a further 60m so that the angle of repose is now less than 20 degrees. Within the Nature Reserve the small springlets crossing the path seem to arise from the change in slope but otherwise there is little evidence of the underlying geology. The slip seems to have occurred where the Reserve is at its widest and the only clue that it took place is from the rather hummocky terrain in places.

From contemporary accounts, the base of the cutting reaches down to the hard limestone *Paludina* Bed within the Woolwich Formation although it is just shown as Lambeth Group on the geological map. This is a freshwater limestone about two metres beneath the base of the London Clay. This change in lithology does not seem to have had any bearing on the landslide which was entirely within the London Clay above. The Lambeth Group and the underlying Thanet Sand and Chalk are much closer to the surface in southeast London as a result of faulting that has pushed them upwards into what is known as the Greenwich Anticline. These perturbations and the much larger one that is apparent in the raised Weald of southeast England and the down fold of the London basin are the result of the collision of Africa with Europe, a process that continues today with earthquakes and volcanoes in Mediterranean countries. In Britain we do not have spectacular Alps but recent engineering work has revealed that London is peppered with small faults. The lack of deep London Clay is the reason why southeast London was not served by the Underground system until recently. Whilst the London Clay is comparatively easy to tunnel through, the underlying beds are very variable sands, clays, pebbles and chalk which bring all sorts of problems such as risk of flooding with water percolating through the sands and the need for equipment strong enough to grind through the hard flints in the chalk below.

The New Cross Gate Cutting today

The London Wildlife Trust conserves the site and a circular path is maintained with rudimentary steps up and down the slopes. In places the floor of the path is entirely composed of brick rubble and elsewhere this is seen in small exposures. It is clear that brick-making took place either here or close by in the past. The 1869 Ordnance Survey shows Brick Fields between the railway and the line of the canal on the east side of the cutting and the rubble may have been imported from there. Brickearth (Langley Silt) overlies the gravels on

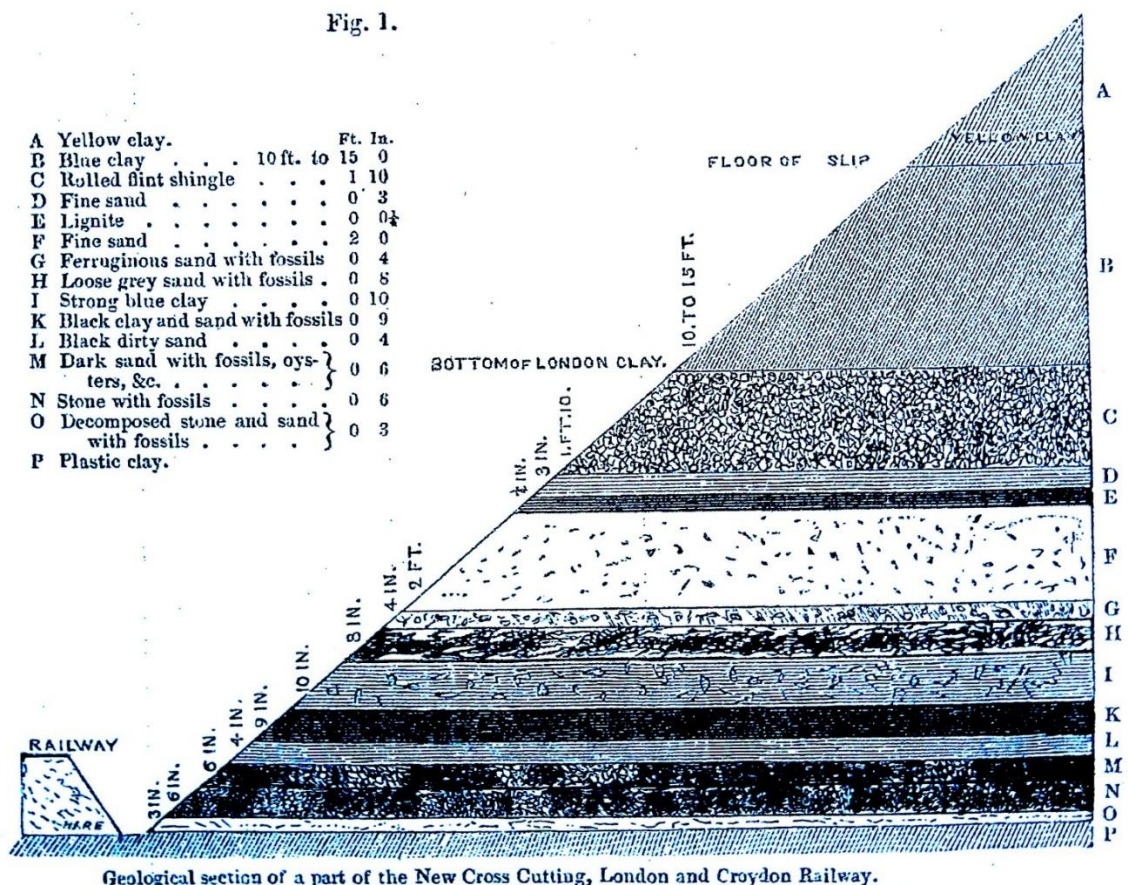
the northwest side of New Cross Gate station and this could also be a source of the brick rubble. Alternatively the slipped clay may have been made into bricks on site.

Apart from the continual passage of trains on the busy railway line below, the site is very quiet and tranquil and a welcome oasis for wildlife in this urban environment. There is a case for the whole of this green corridor as far as Forest Hill (designated a Site of Metropolitan Importance for Nature Conservation) to come under the supervision of the London Wildlife Trust, protecting it from development.

Access

Access is via the gated entrance on Vesta Road, just to the West of the railway bridge. The site is on land owned by Network Rail and managed by London Wildlife Trust who opens it to the public from 1-4 on the last Saturday of the month (see below). Trains to New Cross Gate or Brockley; nearest bus is route 484 along Vesta Road on a circuitous route from Lewisham.

Fig. 1.



Gregory's 1844 section.

This seems to be drawn closer to the station than the area of land slip.

References

- Gregory, C.H. 1844. On Railway Cuttings and Embankments; with an account of some Slips in the London Clay, on the line of the London and Croydon Railway. *Proceedings of the Institution of Civil Engineers* 3:135-173.
- Prestwich, J. 1854. On the structure of the strata between the London Clay and the Chalk in the London and Hampshire Basins. Part II. The Woolwich and Reading Series. *Quarterly Journal Geological Society* 1:75-138.
- Warburton, H. 1844. On the occurrence of a Bed of *Septaria*, containing fresh-water Shells, in the series of Plastic Clay, at New Cross, Kent. *Quarterly Journal of the Geological Society* 1:72
- Archer, J. and Yarham, I., 2000. *Nature Conservation in Lewisham*, Ecology Handbook 30, London Ecology Unit.

Opening times vary; it is best to check the London Wildlife Trust website:

<http://www.wildlondon.org.uk/reserves/new-cross-gate-cutting>