

Greenwich Park: Natural Process Layers

Group Project
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Historic Garden Conservation ENVT0010

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Topography and Landform

Greenwich Park is made up of grassy hills and valleys covering some 74 hectares (183 acres). The park stretches out from the level plateau of Blackheath in the south, then drops over 30 metres (100ft) before leveling out again on the north side towards the Thames. Greenwich Park has always been seen as strategically important because it is the only hill overlooking the Thames on the eastern approach.



OS Map of Greenwich Park



Greenwich is located in south east London and is bordered by Deptford Creek and Deptford to the west; the former industrial centre of Greenwich Peninsula (now home to the o2 and a number of residential / commercial developments); the residential area of Westcombe Park to the east; the Thames to the north; and Blackheath Common to the south.

The park's hilly terrain is provided by Croom's Hill on the western side and Maze Hill on the eastern side. The park still maintains a lot of its formal 17th century layout, but overall it is more a landscape park of the 18th century.

Enjoyed by in excess of 3.5 million visitors a year, it's varied landscape offers many opportunities for sport and recreation, such as running, cycling and walking, and will host the 2012 Olympic equestrian cross-country race as well as a number of other Olympic events.



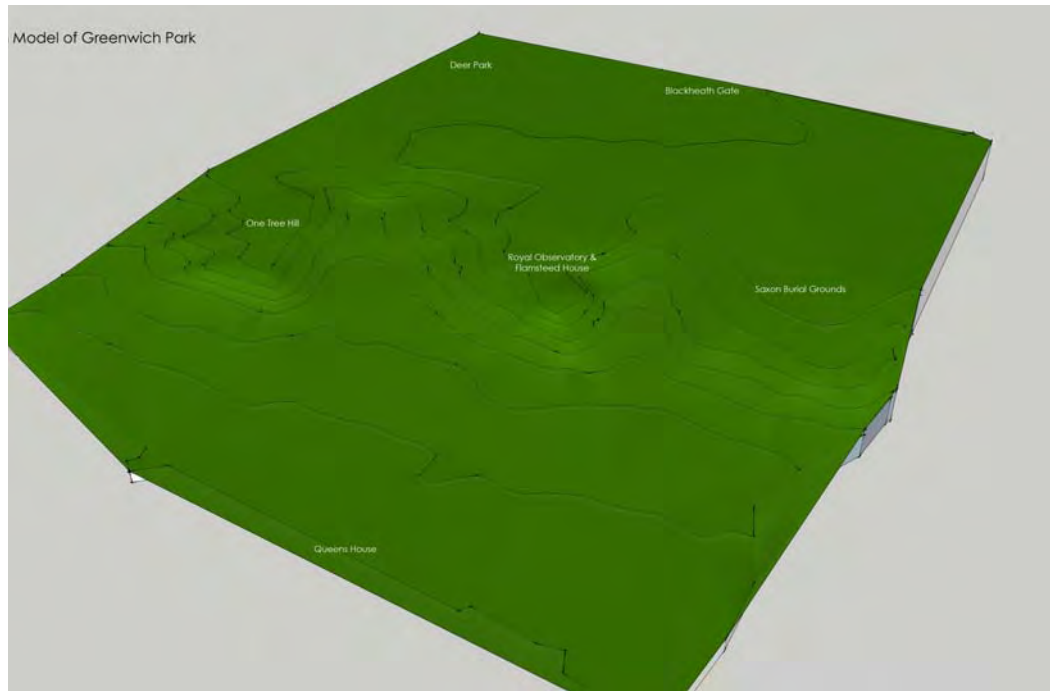
OS Map of London with Greenwich detailed

Greenwich Park is divided in two by a steep-sloped escarpment that runs from east to west. The gravel terraces of the southern half of the Park rise to heights of up to 45m above sea level from which you can enjoy some spectacular views across London.



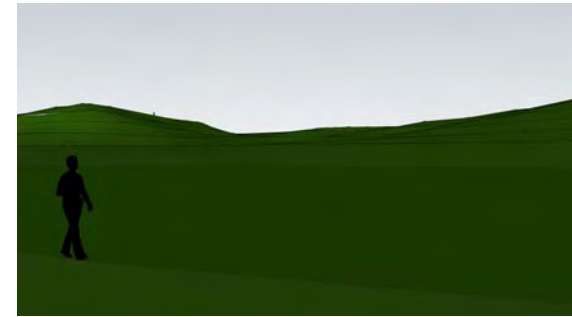
The view from Greenwich Park looking north, with The Queens House in the foreground

Topography and Landform



The above 3D model of the terrain in Greenwich Park shows the incline from the relatively flat areas to the north where the Queens House is located, rising up to the Royal Observatory. Each contour line denotes an increase in 5 meters, starting at 10m above sea level at Queens House and rising to 45m above sea level at the Park's highest point.

Transitions between levels within the park are mainly made with the variety of paths and steps laid across the park. Some grass areas permit walking whereas others are fenced off to protect from erosion.



A view of the terrain from the low area in the north, with One Tree Hill in the background.



A view of the terrain looking from One Tree Hill across to where the Royal Observatory would be and down the hill towards St Mary's Gate.



Topography and Landform

There have been settlements at Greenwich Park since the Roman times and the Danes even raised protective earthworks in the 11th century. It became Crown land in 1427. At this time it would have mostly been heathland and used for hawking (the sport of hunting with Hawks).

In the 16th century, Henry VIII introduced deer and turned it into a hunting park. James I enclosed the park with a 12ft high, 2 mile long wall (much of which remains today and forms the park boundary). In the 17th century, the park was remodeled by Charles II to a formal design inspired by Andre Le Notre. In the 18th century the park was opened up to the public



Greenwich Park is an area of major historical importance and inscribed as Britain's 15th World Heritage Site in 1997. It's landscape is Grade I listed and is named as a Site of Metropolitan Importance for Nature Conservation.

At the time of the park's enclosure as a deer park in 1433, the Park's 73 hectares (183 acres) were largely covered by common land with scrub oak, thorns, birch, gorse, broom and heath.

The formal, French-style layout of the park is defined by impressive avenues of Sweet (Spanish) Chestnut trees which create a sense of grandeur and delineate the main paths and axis of the park. Some of these trees are over 400 years old and are veterans of the landscape.

The gravelly soils of the southern half of the park naturally support a mixture of heathland and acid grassland – acid grassland being of conservation importance both in London and nationally. Other grassland areas of the park support various species of grasses, flowers and insects, and areas are periodically left uncut to increase biodiversity as well as providing visual changes in the grassy landscape.



The Ranger's Field in the south of the park near Blackheath Gate is a large flat area, used for rugby pitches and for cricket in the summer. Close by are also areas for tennis and a putting green.

In the northern end of the park., a traditional orchard dating from 1666 is currently being restored.

Topography and Landform



View looking up towards the Observatory



View looking down from the Observatory



View north-east towards One Tree Hill



The rolling landscape within the park



Saxon burial grounds with the park

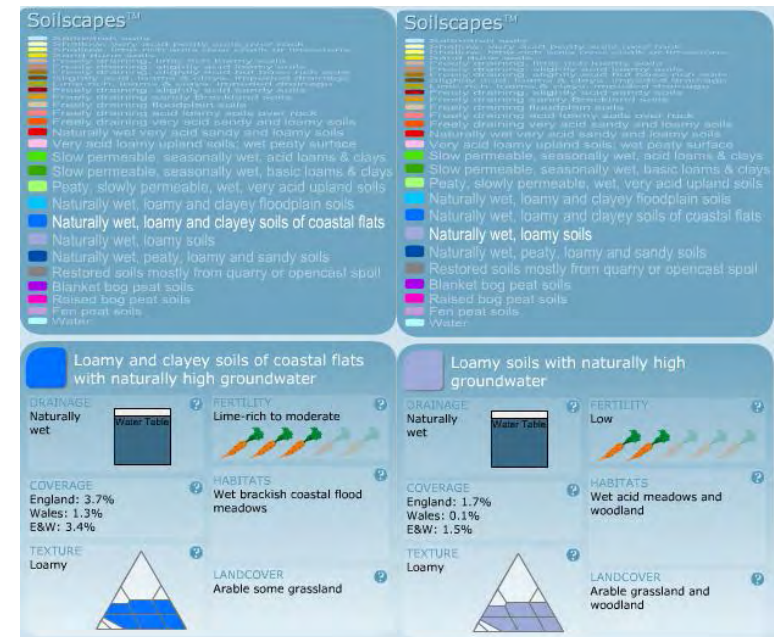
Soils of Greenwich Park

Greenwich Park is situated close to the River Thames on the London Basin, an area of geologically recently formed rock and soils. The London basin was formed during the Paleogene period from sedimentary rocks which were deposited when the land was submerged under the sea. Chalk was laid down first followed by sand, gravel, silts and clay.

Greenwich Park is on the boundary between two similar types of soil. Nearer to the River Thames on the lower lying ground are the loamy and clayey soils which are found in coastal flats. These soils are naturally wet because of the high groundwater and have a loamy texture. They are typically lime rich to moderate and are arable with some grassland. To the south where the ground rises up are the loamy soils which have naturally high groundwater. They have low fertility, a loamy texture whose habitats include wet acid meadows and woodland, and also arable grassland.

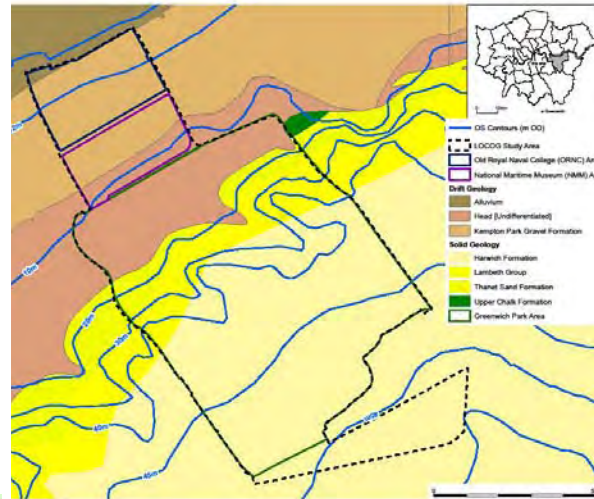
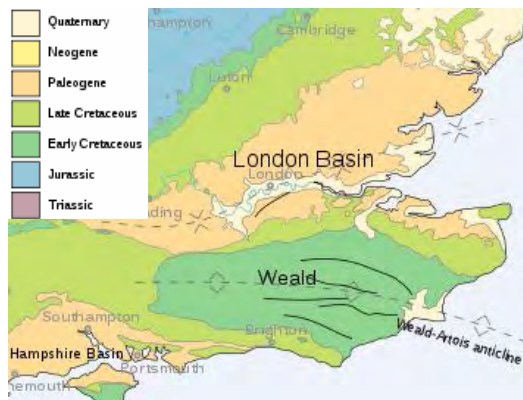


The chalk which lies beneath the surface at Greenwich Park are too low to be of any consequence to the soils and because of this, acid grassland have thrived. The gravelly and sandy soils found here are freedraining overlying acid rocks, and is a common feature of many parts of London, and so becomes an integral part of lowland heath landscapes, commons and parklands. This low nutrient acidic soil has created an opportunity for lowland acid grassland to develop with its unique variety of plant species.



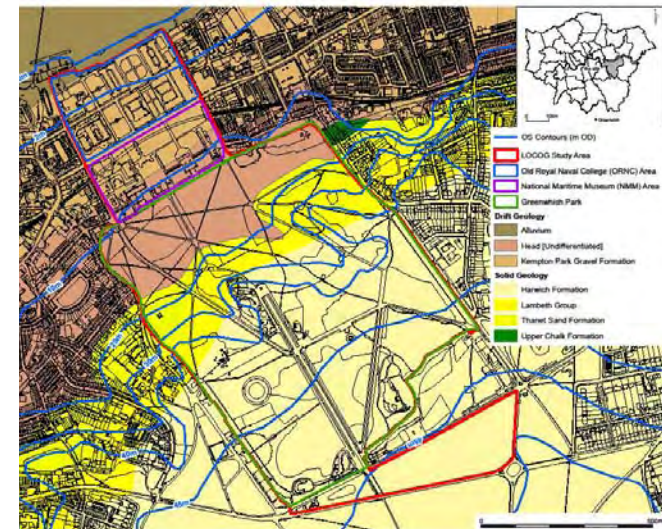
Geology of Greenwich Park

Greenwich Park lies on an area known geologically as the London Basin. The London Basin is relatively new in geological history, although to find how it was formed it is necessary to go back further in history. The London Basin sits on top of the London Platform which are rocks laid down during the Paleozoic period from 542 to 251 million years ago. There is an absence of rocks from the Mesozoic period including the Triassic and Jurassic times because the London Platform was subject to vertical movements which prevented the formation of new rock at this time.



During the Cretaceous period, London was submerged by water and this is the time when the Chalk was formed by the sedimentation of dead marine animals which fell to the bottom of the sea. During the Paleogene period from 65 to 23 million years ago there was movement of the African tectonic plate northwards which collided with the European tectonic plate. This movement caused the formation of the Alps but it also created a fault line around the Greenwich area. The fault lies about half a mile south of the Thames and runs from east to west. The hill in Greenwich Park is a result of this because the northern part has sunk about 10.3m. The Weald-Artois Anticline which runs from Kent to Northern France is also as a consequence of this tectonic movement.

The London Basin is made up of sedimentary rocks which have been deposited in the Paleogene. The oldest is the Thanet Sands which are shallow marine sands and lay on top of the Chalk about 17 metres thick on the hill and were laid down between 58-56 million years ago. On top of these are the Lambeth Group which consists of gravel, sands, silts and clay which were laid down between 56-55 million years ago. The Lambeth Group at Greenwich is made up of the Woolwich Beds which is a grey clay and pale sands about 10 metres thick and is about 10 million years old. On top of the Lambeth Group is the Thames Group, which is where the Harwich Formation is found beneath London clay, a bluish clay that was used for the construction of many of London's buildings.



Vegetation of Greenwich Park

General Vegetation of Greenwich Park

Greenwich Park Vegetation consists mainly of trees (mature and semi-mature) and amenity grass. Though there are also a few areas that have been discovered to be low-nutrient acid grassland and reinstated, the largest one in Greenwich Park is at Crooms Hill. As these areas are an abundant wildlife haven.

Layout and History of Vegetation

- The avenues of trees first began to take place between 1661 and 1669, Sir William Boreman petitioned Charles II in August 1661, and in the style of Le Notre, began planting trees and laying out the original avenues between September 1661 and June 1662. Although the avenues have altered slightly the general layout is the same today as it was.
- 1519 Henry VIII recorded dancing under Old Oak with Anne Boleyn.
- 1661-62 Sum of £182 12s for planting of elm, birch, quickset (hawthorn), holly and ash by Sir William Boreman, plus £92 14s for 600 elm and fetching chestnuts from Lesnes Abbey.
- 1790 ten apple trees planted by HM gardener.
- 1795-96 Sum of £129 received for sale of 37 trees, oak, elm, ash and chestnut.
- 1800 High winds in November blew down many trees.
- 1812 Tree survey lists 2,970 standing: 1,393 elm; 841 chestnut; 651 oak; 42 fir; 21 sycamore; and 6 beech.
- 1848 The one tree of One Tree Hill blown down.
- 1894 Last of Scots pines planted by Boreman in 1664 were felled.
- 1897 A 15ft British oak planted to commemorate Queen Victoria's Jubilee.
- 1941 Tall chestnut trees topped to improve sights of anti-aircraft guns, this also would have been around the time that a large grass area near the Queen's house and boating pond were converted into allotments to aid crop supply during the war.
- 1975 Dutch Elm disease led to the felling of 100 mature elms.
- 1977 To commemorate Queen Elizabeth II's Silver Jubilee an avenue of trees were planted in front of the Queen's House.
- 1987 Great Hurricane of October 16th; some 400 trees blown over.
- 1992 The Duke of Edinburgh planted new oak tree.

Tree List in Greenwich Park

Main Trees in Greenwich Park:

- English Oak (*Quercus robur*)
- Turkey Oak (*Quercus cerris*)
- Beech (*Fagus sylvatica*)
- Horse Chestnut (*Aesculus hippocastanum*)
- Lime (*Tilia x europaea*)
- Hornbeam (*Carpinus betulus*)
- Sweet Chestnut (*Castanea sativa*)
- London Plane (*Platanus x Hispanica*)

ENGLISH OAK
(*Quercus robur*)



BEECH
(*Fagus sylvatica*)



TURKEY OAK
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HORSE CHESTNUT
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LIME
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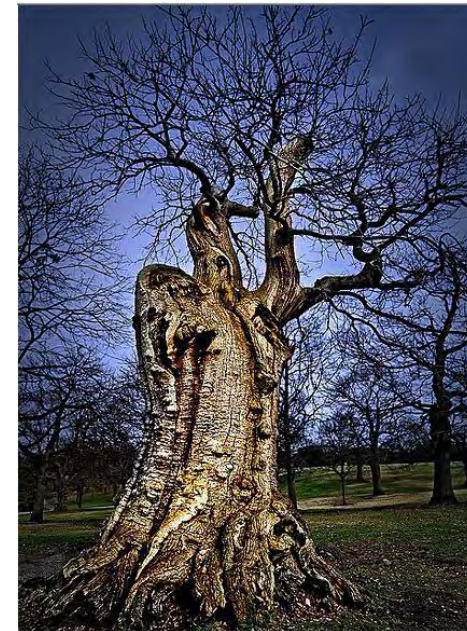
HORNBEAM
(*Carpinus betulus*)



SWEET CHESTNUT
(*Castanea sativa*)



LONDON PLANE
(*Platanus x Hispanica*)



An example of one of the Ancient Trees in Greenwich Park



Other Trees and Plants in Greenwich Park

Plant species found in Greenwich Park

Greenwich Park is full of a variety of plant species including natural and wildlife encouraging plants, trees and shrubs, as well as ornamentals such as a flower garden and rose garden. Towards the top of Maze Hill near the Deer Hide and Lake there is a dense amount of shelterbelt planting and lots of ornamental shrubs. Outside the Queen's House there is a long herbaceous border and a few areas of Acid Grassland.

Other trees that are found in Greenwich Park are:

- Holly (Ilex aquifolium)
- Maidenhair tree (Ginkgo biloba)
- Poplar (Populus sp.)
- Silver birch (Betula pendula)
- Spanish sweet chestnut (Castanea sativa)
- Shagbark hickory (Carya ovata)
- Field maple (Acer campestre)
- Hazel (Corylus avellana)
- Cedar of Lebanon (Cedrus libani)
- Other coniferous species



Other Plant Species are:

- Rosa sp.
- Sedums
- Pampus
- Rhododendrons
- Acuba
- Phormiums
- Cotinus
- Prunus sp.
- Buxux
- Sarcococca
- Mahonia
- Camelia
- Taxus
- Choisya
- Tulips
- Bedding
- And many more



Acid Grassland

Greenwich Park where rotational cutting regimes are enhancing areas of both neutral and acid grassland. Croom's Hill in Greenwich Park is an exciting project to restore an area to a more natural acid grassland community.

The project will take many years but is already showing signs of success with the development of an *Agrostis/Festuca* sward with abundant sheep's sorrel (*Rumex acetosella*) and other species.

Buildings and Artifacts

Greenwich Park covers 183 acres (73 hectares) now the oldest enclosed Royal Park. It is located on a hilltop with extraordinary views across the River Thames to the Docklands and the City of London, between Blackheath and the River Thames.

There has been settlement on this site since the Roman times, Remains of roman shrine still exist on the east side of the park, that date AD43 - AD c.410.

Greenwich has been linked with royalty. since it was inherited in 1427 by the Duke of Gloucester, the younger brother of Henry V. Greenwich was the birthplace of Henry VIII (in 1491) who first introduced deer to the park. His two daughters Mary I and Elizabeth I and his son Edward VI were also born here.

The Queens House

In the early 1600s the palace became a gift from James I to his wife, Queen Anne. The Queen herself then commissioned Inigo Jones to design her a special home which is known as the Queen's House. Construction started in 1616. Unfortunately the Queen died in 1619 and work stopped,



The Queens House. A.Palmer, Greenwich Guide

until ten years later when King Charles I married and so he gave it to his Queen, Henrietta Maria. Inigo Jones was recalled as the architect and it was completed around six years later. Then came the effects of the Civil War in 1642. Charles II restored and had the House enlarged by John Webb in 1662.

The Royal Observatory



Britain's 1st purpose-built scientific research facility commissioned by Charles II in 1675 and designed by Sir Christopher Wren. It was built as a home for the first Astronomer Royal, John Flamsteed. He lived on the ground floor, and worked in the Octagon room above until his death in 1719. His successor Astronomers Royal lived and worked in the house until 1948.

The time ball on the roof was erected in 1833, this was the first public time signal. 'At five minutes to one p.m. every day the ball rises half-way up the pole, reaching the top at two minutes to one. The ball drops at exactly one o'clock. Since the ball can be clearly seen from the river, ships have used the signal to check their time.' (*Greenwich Park Guide 2010.*)

The Royal Naval College

The Old Royal Naval College a masterwork of baroque architecture. It was designed by Sir Christopher Wren and Nicholas Hawksmoor in 1669. It was formally a hospital for seamen, then it became the Royal Naval College. It is now partly the University of Greenwich and the Trinity College of Music. The later landscaping dates from the mid-nineteenth century and was created by Philip Hardwick, then Surveyor to the Greenwich Hospital.



Old Royal Naval College, J.Banerjee

Vanbrugh Castle

Although not within the park walls this fortress-like folly on Maze Hill was designed by Sir John Vanbrugh (the same architect of Blenheim Palace) for his own occupation when he was Surveyor to the Royal Naval Hospital in 1719.



Vanbrugh Castle, designed and residence of Sir John Vanbrugh. The castle is modelled on the French Bastille, where Vanbrugh was imprisoned on charges of spying for the British in 1690-92.

greenwichguide.com

The Wolfe statue

On top of the same hill as the Old Greenwich Royal Observatory stands the statue of General James Wolfe, (1727-59) looking out towards the River Thames. Wolfe commanded the British forces at Quebec, against the French and won a great victory, at the cost of his life. He was a resident of Greenwich and he is buried in the parish church, St Alfege's.

The statue was erected in 1930 and bears the inscription "This monument, a gift of the Canadian people, was unveiled by the Marquis de Montcalm".

From the statue are the breathtaking views of the city.



[General Wolfe Statue, Greenwichguide.com](http://Greenwichguide.com)