Kew (United Kingdom)

No 1084

1. BASIC DATA

State party: United Kingdom

Name of property: Royal Botanic Gardens, Kew

Location: London Borough of Richmond upon Thames, southwest Greater London

Date received: 16 January 2002

Category of property:

In terms of cultural property categories, as defined in Article 1 of the World Heritage Convention of 1972, this is a *site*. The property is also a *cultural landscape*, under the terms of paragraph 39 of the *Guidelines for the implementation of the World Heritage Convention*.

Brief description:

The Royal Botanic Gardens of Kew form a historic landscape garden whose elements illustrate significant periods of the art of gardens from the 18th to the 20th centuries. They house botanic collections (conserved plants, living plants and documents) which have been considerably enriched through the centuries. Since their creation in 1759, the gardens have made a significant and uninterrupted contribution to the study of plant diversity and botanic economics.

2. THE PROPERTY

Description

The Royal Botanic Gardens of Kew are situated on the south bank of the Thames River in the southwest of London and extend over 132 ha.

They include landscape features, edifices and collections which bear witness to a continuous development from the creation of the pleasure gardens in the 16th century to the current site, including the creation of the botanic gardens in 1759.

The landscape consists of gardens (Azalea Garden, Bamboo Garden, Japanese Garden, Aquatic Garden, etc.), wooded glades, ornamental ponds (Lake, Waterlily Pond, etc.) and vistas. The edifices are mostly situated on the edge of the gardens, some sectors of which are not open to the public.

Dutch House, also known as Kew Palace, is the oldest building on the site (1631). Classical in inspiration, this house (in red brick laid in Flemish bond style) was built on the banks of the Thames for Samuel Fortrey, a merchant of Dutch origin. In 1718, it became associated with the royal family and underwent three successive renovations. To the rear the house opens out on to the Queen's Garden, a parterre garden in the 18th century style, designed in 1959, which contains exclusively plants known in England in and before the 17th century.

The Orangery, the largest Georgian edifice on the site, was built by William Chambers in 1761 and was originally associated with the White House, a residence which was demolished in 1802-1803. Despite the alterations carried out in the mid 19th century to give the lemon trees more light, the Orangery stopped being used for its original purpose and housed a museum until 1959.

Built near a wooded park, Queen Charlotte's Cottage was probably originally the residence of the head of the menagerie, and was given to Queen Charlotte in 1761. This traditional house with a thatched roof formed the centrepiece of a set of buildings known as the New Menagerie, which housed 'exotic' animals including kangaroos.

Many of the follies used to ornament the gardens in the 18th and 19th centuries still remain, such as the Ruined Arch (1759), the Temple of Bellona (1760), both by William Chambers, the Temple of Aeolus (1845) and King William's Temple (1837).

The Rhododendron Dell is one of the largest earthworks at Kew. This valley, created by Lancelot 'Capability' Brown at the end of the 18th century was planted with rhododendrons in the late 1850s. The ha-ha designed by the same architect still marks the boundary of the gardens on the banks of the Thames.

The essential elements of the landscape garden designed by William Nesfield are one of the outstanding features of Kew. This garden is centred on an iron and glass structure, the Palm House (1844-1848), designed by the architects Richard Turner and Decimus Burton, one of the finest 19th century glasshouses still in existence, and at the time of its construction the largest (108 m long, up to 30 m wide and 20 m high). Richard Turner also designed the heating system, installed under the wrought iron grille floor, from which the smoke was expelled through a 165-metre tunnel to the Campanile, a brick chimney resembling an Italian bell tower.

The glasshouse contains one of the world's largest collections of palmtrees from tropical rain forests, and also tropical plants known for their economic importance. The glasshouse is surrounded by a terrace and flowerbeds. On one side the glasshouse is reflected in a pond, and on the other it opens out towards the Rose Garden (1845) which is at a slightly lower level.

The landscape design of Nesfield is superimposed on the 18th century layout to form a great variety of small landscaped sectors with flowerbeds, terraces with seats, an ornamental lake and vistas.

From the Palm House there are three vistas, taking the form of avenues, which complete the project of William Nesfield: the Pagoda vista, the Sion vista towards the Thames, and a minor vista.

The Pagoda, employed by William Nesfield to form the limit of the vista of the same name, was designed by William Chambers in 1761-1762. This 50 metre-high, ten-storey structure, made of brick, has lost part of its ornamentation.

Decimus Burton also designed the Temperate House (1859), the largest of the glasshouses open to the public, where plants and trees from temperate regions all over the world are cultivated. The edifice (188 m long, 18 m high, 4880 m^2) consists of three parts: a rectangular central part and two lateral octagons extended by two short wings, made of wood, iron, stone and stucco.

The Princess of Wales Conservatory, officially opened in 1987, is Kew's most complex glasshouse. Its technology enables the recreation of ten different environments, covering all the climatic conditions found in the tropics, from arid desert to the most humid rainforest.

The Herbarium, originally an 18th century hunting lodge, houses collections of plants and a library. It was founded as a result of donations by eminent botanists in 1852. The building was extended progressively as the collections were expanded.

Marianne North was a painter of botanic subjects, and in 1879 she offered the director of the botanic gardens not only her collection of some 832 pictures of plants observed all over the world but also a gallery in which to exhibit them. The Marianne North Gallery by James Fergusson reflects this historian's interpretation of the architecture of lighting in Greek temples.

A number of buildings are used for teaching and research, which constitute the major activities of Kew Gardens. The former museum of botanic economics (1847) has been converted into a school of horticulture (1990) and a new Jodrell Laboratory (1965) caters for the needs of researchers in plant anatomy, physiology, cytogenetics and biochemistry. On the edge of the gardens, several large glasshouses are used for the preparation and cultivation of numerous species.

Kew Gardens are also notable for the exceptional richness of their collections. The 19 collections are divided into three main categories: the collections of conserved plants (the herbarium alone contains over eight million specimens), the collections of living plants (70,000) and genetic resources, and the documentary and visual reference collections (including 750,000 published works, 200,000 photographs and over 175,000 illustrations, etc.). These collections, highly exhaustive, diversified and of very high quality, are used in various ways for teaching, research, medicine and conservation.

History

The history of Kew Gardens is very complex. In 1772 two contiguous royal estates were combined: Richmond (the western half of today's gardens) and Kew (the eastern half). Three other estates (private residences and gardens) were also included. The palace built by Henry VII at Richmond in the 16th century, which could be reached by boat from the capital, proved an attractive venue for the court during the summer months. The Kew estate became the property of the Capel family, who made its gardens into a much admired attraction by the mid 16th century. The Capels sold the lease to Frederick, Prince of Wales, in 1731.

The gardens of Richmond and Kew were substantially remodelled at the end of the 18th century. Queen Caroline entrusted the alterations at Richmond to the king's gardener, Charles Bridgeman (who died in 1738), and the architect and landscape gardener William Kent (1685-1748) – two well-known figures in the early years of landscape gardening, which at the time was a novel approach to the art of gardens. Following the death of the Prince of Wales (1751), Princess Augusta was assisted by Lord Bute and William Chambers (1723-1796), who gave botanical, architectural and gardening advice, and set in motion a highly active period for the estate. William Chambers revived the fashion for 'Chinoiseries' which gained popularity throughout England and then spread to the continent in the form of Anglo-Chinese gardens.

It is generally accepted that Princess Augusta and Lord Bute established the first botanic garden at Kew in 1759. This modest 4-hectare garden, originally for medicinal plants, was developed thanks to the efforts of the gardener William Aiton.

It was not until the arrival of Sir Joseph Banks as head of the botanic garden of Kew in 1773 that the institution won an international reputation. Banks shared with George III a determination to use exotic and native plants for economic purposes, thereby determining the future line of development of the gardens. In the following decades, plant researchers travelled all over the world to bring back new species (from India, Abyssinia, China and Australia) and Kew became the centre of botanic economics for Great Britain and its colonies.

In 1764, Lancelot 'Capability' Brown began to leave his imprint on the Richmond gardens, opening up large vistas and carrying out informal plantations. William Chambers was working in the neighbouring gardens of Kew. The botanic gardens were developed, an arboretum was founded and the small glasshouses increased in number. In 1802, the wall separating the two estates of Richmond and Kew was demolished.

The deaths of Sir Joseph Banks and of George III in 1820 plunged the gardens into a period of decline that was destined to last for around twenty years. Following a parliamentary enquiry and a strong campaign of support, the gardens were saved from irremediable closure. The appointment of Sir William Hooker as the first official director ushered in a period of revitalisation (1841-1885).

William Nesfield, assisted by Decimus Burton, remodelled the gardens at Richmond and Kew, which now formed a single landscaped ensemble. From this period date the construction of the two remarkable glasshouses (Palm House and Temperate House), the foundation of the herbarium and the creation of the national arboretum. Kew helped provide a new impetus for scientific research in the interest of the British Empire, which sent seeds, plants and horticultural advice to its colonies (such as Malaysia, India and Sri Lanka).

With the change of fashions and the development of the gardens, certain elements of the complex landscape devised by William Nesfield were gradually adjusted to facilitate upkeep, and new projects were undertaken, such as the restructuring of the arboretum, the creation of the Alpine garden, and the Japanese gateway.

As the number of visitors increased, the scientific collections were enriched (the herbarium was extended in 1903 and then again in 1932) and glasshouses and spaces were altered to house living plant collections (such as the

first Alpine House in 1887 and the Rhododendron House in 1925).

While the Second World War inflicted some material damage on Kew Gardens, the slowdown in its activities, already in evidence with the decline of the British Empire, was confirmed. The bicentenary of the creation of the gardens gave a new impetus which resulted in the restoration and reopening of the Palm House, and the improvement of the Rock Garden, the Azalea Garden and the Order Beds. As these interventions were not sufficient to accommodate the growing collections, some specimens were moved to a 200-hectare garden at Wakehurst (1965). New glasshouses with more advanced technology were built such as the Alpine House (1981), and in particular the Princess of Wales Conservatory (1986). In 1963, the Jodrell Laboratory was rebuilt to a larger design to accommodate the constantly growing number of researchers. The main activities of Kew Gardens today are the conservation of the heritage of the site itself, and the conservation of ecosystems worldwide.

Management regime

Legal provision:

The property proposed for inscription on the World Heritage List, which includes the Royal Botanic Gardens of Kew, Kew Palace and Queen Charlotte's Cottage, are the hereditary property of Her Majesty the Queen Elizabeth II.

The extent of the property follows the current administrative delimitation of the Royal Botanic Gardens of Kew (except for Little Kew Green) and also includes Kew Palace and Queen Charlotte's Cottage, which are placed under the protection of Historic Royal Palaces.

The whole of the property proposed for inscription is included in a conservation zone designated by the London Borough of Richmond upon Thames. Another part of the buffer zone territory is protected by the conservation zone of the London Borough of Hounslow. The permits needed to carry out works or change functions are subject to the approval of these local authorities, which in the case of historic buildings and zones, consult English Heritage.

44 buildings and structures situated on the site have been listed as buildings of special architectural and historical interest by the Secretary of State for Culture, Media and Sport. All listed buildings are protected by the 1990 Listed Buildings and Conservation Zones Act. This law provides statutory protection to the building, its characteristics and its environment.

The whole of the property proposed for inscription is Level 1 listed on the English Heritage register of parks and gardens, because of its exceptional historic interest. English Heritage and the Garden History Society must be consulted when a permit application is made concerning an intervention on the listed gardens and their environment. Kew Gardens are also protected by Richmond upon Thames from the viewpoint of nature conservation.

Protection of the buffer zone (Old Deer Park, a royal estate south of Kew Gardens, Sion Park on the opposite bank of the Thames, the river from Isleworth Ferry Gate to Kew Bridge, the historic centre of Kew Green with the adjacent buildings and the church, and then to the east, the built-up sectors of 19th and 20th century houses) is granted at various levels by the individual development plans of the two boroughs mentioned above.

The ICOMOS mission took the view that the overall aspect of six 22-storey tower blocks (Haverfield estate) at Brentford on the opposite bank of the Thames, opposite the gardens and outside the buffer zone, seriously diminished the visual experience at Kew at several points in the gardens.

ICOMOS was informed in December 2002 that a building permit had been granted by the London Borough of Hounslow for a 16-storey block at Brentford near the Haverfield estate.

Management structure:

The property has two separate management units which work together for the conservation and management of the site. The Royal Botanic Gardens of Kew (board of directors and director) manage the whole site except for Kew Palace and Queen Charlotte's Cottage, which are managed by Historic Royal Palaces (board of directors and chief executive). Kew Gardens are placed under the responsibility of the Secretary of State for the Environment, Food and Rural Affairs, and Historic Royal Palaces is appointed by the Secretary of State for Culture, Media and Sport on behalf of Her Majesty the Queen.

The property management plan was adopted by the Secretariat of State for Culture, Media and Sport in November 2002. The Royal Botanic Gardens of Kew is in charge of its implementation. At the same time, the authorities have drawn up a Property Conservation Plan (November 2002), which is a flexible management tool. It thus reinforces the management plan to ensure that the values of the site are conserved. These two documents are in line with the *Guidelines for the implementation of the World Heritage Convention* as regards management issues.

Resources:

The Department of the Environment, Food and Rural Affairs provides most of the funds necessary for the functioning of Kew Gardens, whose annual budget is around 27 million pounds sterling. The other sources of financing are the sale of products and services, donations and fund-raising. The financing sources of Historic Royal Palaces are visitors' entrance fees, sales of products, etc.

Justification by the State Party (summary)

Criterion ii: From the early 18th century through to the present day, Kew has been situated at the heart of architectural, technological, scientific and landscape design developments due to its association with the British Royal Family, the British Empire and its role as the world's premier botanic gardens and research centre.

Criterion iii: Kew's exceptional and diverse living collections, supported by the comprehensive preserved collections, exemplify the active European cultural tradition of collecting and cultivating exotic plants for aesthetic, scientific and economic purposes. This tradition has also led to recording and monitoring of the very rich local biodiversity for over 120 years. The biodiversity

includes an exceptional range of birds, insects, lichens and fungi; some of the latter have proved to be new to science.

Criterion iv: The architectural ensemble at Kew includes a number of unrivalled buildings, including the 17th century Kew Palace, the 18th century Pagoda, the 19th century Palm House, … The historic landscape within which these buildings are situated is a remarkable palimpsest of features from the 18th, 19th and 20th centuries.

Criterion vi: The Gardens' diverse plant collections and Kew's second Director, Sir Joseph Hooker (1817-1911), were closely associated with Charles Darwin and his theory of evolution, embodied in *The Origin of Species.*

3. ICOMOS EVALUATION

Actions by ICOMOS

An ICOMOS mission visited Kew in July 2002. A IUCN expert accompanied the mission. ICOMOS also consulted its International Scientific Committee on Historic Gardens and Cultural Landscapes.

Conservation

Conservation history:

Over the past 25 years, very substantial conservation work has been carried out on many of the structures.

In 1988, the Japanese Gateway was restored by Japanese craftsmen using traditional techniques. The Palm House, a fragile structure, is constantly undergoing a repair and maintenance programme so that it can continue to be used for its appointed purpose. But more substantial conservation works have become necessary. During the 1980s, the glasswork was completely dismantled to reveal its basic structure, and wrought iron elements corroded by humidity were repaired while this was still possible.

Similarly, after a hundred years of activity, the Temperate House benefitted from a substantial conservation programme (1978-1982).

State of conservation:

Most of the buildings and structures are in a good state of conservation. The persons in charge of the property conduct a continuous repair and conservation programme, and call on excellent specialists to carry out the restoration work. The restoration project for the Aroid House, made of stone and glass and designed by John Nash in 1825, is currently being drawn up. A team of competent horticulturists ensure the constant upkeep and management of the landscape and its various components. The Broad Walk has recently been replanted as part of an upkeep programme.

Management:

The Kew Gardens management plan and conservation plan should help those in charge of the site to manage the conservation of the landscaped gardens and the conservation of the collections (which could become a source of conflict over future decades). The plans should also enable the development of a general approach to the conservation of the various historic gardens. It is intended to incorporate gardens of modern design into the whole so as to stress the uninterrupted vitality of Kew. It is important to ensure that these projects do not hinder a clear interpretation of the historic developments in landscaped/architectural spaces which are sometimes planted in profusion.

Risk analysis:

The rules that apply to the conservation zones that cover the buffer zone should protect the immediate environs of the property proposed for inscription from any undesirable developments.

Kew Gardens is continuing its traditional activities in the field of research and in providing access for visitors. Studies by the site managers indicate that the capacity of Kew Gardens is around 1 million visitors a year, a figure that could potentially be raised to 1.4 million visitors a year from 2009 onwards without adverse effects on the cultural and ecological values of the site.

An emergency procedure and crisis management plan has been drawn up to deal with any incidents involving aircraft travelling to and from Heathrow Airport. All buildings which could be affected by fires are fitted with alarm systems connected to fire brigade intervention teams.

Authenticity and integrity

The authenticity of Kew Gardens is indisputable. Since their creation in the 18th century they have remained faithful to their initial purpose.

The 44 listed buildings are monuments of the past, and reflect the stylistic expressions of various periods. They retain their authenticity in terms of design, materials and functions. Only a few buildings have been used for a purpose different from that originally intended (the Orangery now houses a restaurant).
Unlike the works of architecture, in each of the landscaped garden areas, the past, present and future are so closely interwoven (except in the case of vestigial gardens created by significant artists, such as the vistas), that it is sometimes difficult to separate the artistic achievements of the past in terms of the landscape design of the different periods. A complementary preservation effort is necessary for the landscape design, and this could be carried out within the framework of the provisions of the property's management plan and conservation plan.

The physical integrity of the site and its buffer zone has been preserved up to the present day. Kew includes elements that bear witness to the history of the development of landscape gardens, and to its uninterrupted role as a botanic garden and as a centre of interest for the public.

Comparative evaluation

The botanic garden (Orto botanico) of Padua (Italy), inscribed on the World Heritage List in 1997 (on the basis of criteria ii and iii), is the oldest representative of this type of cultural property in the world. It conserves particularly rare plants from the 16th and 17th centuries and contains over 6,000 species. But its collections do not equal the number, diversity and complexity of those of the Royal Botanic Gardens of Kew. The botanic garden (Orto

botanico) of Padua also bears witness to artistic and cultural traditions from the second half of the 16th century.

Looking beyond the World Heritage List, Kew Gardens could be compared to roughly ten other botanic gardens in the rest of the world in view of its historical importance and its value at the present time.

Kew has one of the largest collections of living and conserved plants. The herbarium of the botanic garden of New York (USA) has 6.5 m specimens, and the royal botanic gardens of Sydney (Australia) 1 million. The Jardin des Plantes – Muséum d'histoire naturelle in Paris (France) may have collections that are comparable in terms of number of species (the exact data are not known). The Botanischer Garten and Botanisches Museum at Berlin-Dahlem (Germany) has 22,000 living species and the botanic garden of New York 19,000.

Although other countries transferred plant species from their botanic gardens to their colonies, Kew Gardens played a fundamental role in the dissemination and implantation of exotic species throughout the British Empire. The volume and the impact of this movement are incomparable in scale. Several of these species still play a major economic role today in certain countries. This is the case for example of rubber in Malaysia, India and Sri Lanka.

Outstanding universal value

General statement:

Kew Gardens are situated along the cultural landscape of the Thames, consisting of a picturesque series of parks, estates and significant towns. Since the 17th century, the site proposed for inscription has been a place of retreat for the royal family. In the 18th century, internationally renowned architects such as William Chambers and Lancelot 'Capability' Brown not only created many edifices, but also remodelled the earlier baroque gardens to make a pastoral landscape in the English style, establishing a fashion that then spread throughout the continent. The first botanic garden at Kew was founded in 1759.

In the mid 19th century, the Victorian architect and landscape gardener William Nesfield supervised the merging of several royal gardens which then became the focus of a growing level of botanic activity. The period 1840-1870 saw the construction of two internationally renowned glasshouses, Palm House and Temperate House, which are emblematic of Kew Gardens, as manifestations of the splendour of British horticultural arts, expertise and technology. The role played in the past and today by Kew gardens in research and teaching is also linked to the richness of the collections and the alterations made in the 20th century.

Evaluation of criteria:

The State Party proposes that the property should be inscribed on the basis of ***criteria ii, iii, iv*** and ***vi***.

Criterion ii: Several major edifices of the royal botanic gardens of Kew have been inspired by existing forms, and have in turn influenced architecture in Europe. The architects and gardeners who worked at Kew in the 18th century – Charles Bridgeman, William Kent, Lancelot 'Capability' Brown and William Chambers – were the advocates of a new conception of garden art, the landscaped garden, whose forms then spread to Europe. William Chambers was invited to decorate the gardens with exotic follies. The pagoda he built reflects the contemporary taste for 'Chinoiseries' to which he gave a new impetus. The two 19th century glasshouses (Palm House and Temperate House), considered highly audacious when they were built, have become models for other constructions all over the world.

The exchanges also relate to horticultural activities and botany. The plant species were collected in British colonies, but in some cases they were redistributed to other countries where they today still provide a basis for economic activity.

Criterion iii: Joseph Banks and William Hooker, gardeners of great renown whose revolutionary methodology modernised botany in Europe in the 18th and 19th centuries, were both directors of Kew Gardens. The gardens have significantly contributed since their foundation to plant research and conservation around the world. More recently, Kew Gardens' conservation work has continued at international level, notably for the implementation of the Convention on International Trade in Endangered Species (CITES, 1975) and the Convention on Biological Diversity (CBD, 1992). The herbarium contains not only the most extensive collection of plant species in the world but also documentation of exceptional importance.

Criterion iv: The property proposed for inscription on the World Heritage List is notable for remarkable historic and contemporary edifices and landscape features. These include Kew Palace (17th century), the Pagoda (18th century), the two 19th century glasshouses and the 20th century glasshouse.

Criterion vi: It is interesting to note that the intervention of Sir Joseph Hooker, director of Kew Gardens, and of C. Lyell enabled Alfred Russell Wallace (*On the tendency of varieties to depart infinitely from the original type*) and Charles Darwin (*The Origin of Species*) to jointly present their works to the Linnean Society in 1858. But while recognising the role played by Sir Joseph Hooker as advisor and supporter, and the contribution of Kew Gardens to the botanic research of Charles Darwin, ICOMOS considers that this relationship is not sufficient to justify the inscription of the property on the basis of criterion vi.

The report drawn up by the IUCN following the visit to Kew Gardens stresses the importance of the botanic collections, and the remarkable contribution made by the institution in science, species conservation and teaching.

4. ICOMOS RECOMMENDATIONS

Recommendation for the future

The right balance needs to be struck between the use of the site for botanical purposes and the preservation of the existing historic gardens. It is important that the specialist personnel at Kew should be able to count on the presence of landscape architects qualified in the history of art and history in general, so that the architectural conservation activities can be coordinated on-site.

The heritage of William Chambers, Lancelot "Capability" Brown and William Nesfield should be shown off to better effect, both as regards the reconstruction of individual ornamental elements and their integration in the cultural landscape of the Thames.

Recommendation with respect to inscription

That this property should be inscribed on the World Heritage List on the basis of cultural ***criteria ii, iii*** and ***iv***:

Criterion ii: Since the 18th century, the Botanic Gardens of Kew have been closely associated with scientific and economic exchanges established throughout the world in the field of botany, and this is reflected in the richness of its collections. The landscape features and architectural features of the gardens reflect considerable artistic influences both with regard to the European continent and to more distant regions.

Criterion iii: Kew Gardens have largely contributed to advances in many scientific disciplines, particularly botany and ecology.

Criterion iv: The landscape gardens and the edifices created by celebrated artists such as Charles Bridgeman, William Kent, Lancelot 'Capability' Brown and William Chambers reflect the beginning of movements which were to have international influence.

ICOMOS, March 2003