



Kew Royal Botanic Gardens

World Heritage Site Management Plan 2020–2025



United Nations
Educational, Scientific and
Cultural Organization



Royal Botanic Gardens, Kew
inscribed on the World
Heritage List in 2003



Tulips by the Temperate House

Foreword

The Royal Botanic Gardens, Kew tell the story of our relationship with plants, from innovative landscape design to global exploration, scientific endeavour and conservation action. The resulting rich and diverse cultural landscape is of national and international significance spanning over 260 years. Declared a UNESCO World Heritage Site in 2003, the Royal Botanic Gardens, Kew is a world-famous, and world-leading scientific organisation and botanic garden.

Much has been achieved since the last World Heritage Site (WHS) Management Plan, including the largest restoration project Kew has ever undertaken with the Temperate House, the publishing of the first Science and Collections Strategies and the launch of a new MSc programme. The number of visitors to Kew Gardens has consistently grown prior to 2020, thanks in part to the establishment of a successful event and exhibition programme, all supporting Kew's public engagement role to connect people with nature. These activities are key to the site's long-term financial sustainability.

RBG Kew continues to play a crucial role in the UK's work to fulfil its commitments to international agreements, in particular the Convention for Biological Diversity and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. With over 400 partnerships across the world, RBG Kew's influence as a global leader in plant and fungi science makes it a vital part of the UK's and international science infrastructure. RBG Kew's internationally recognised collections, scientific research, and expertise are contributing to nature-based solutions to global challenges, including food insecurity, climate change and biodiversity loss.

The work of RBG Kew also supports the UK's contribution to the UN Sustainable Development Goals. For the first time, the WHS Management Plan has integrated this approach into the management of the WHS, revealing the potential of World Heritage to contribute to sustainable development.

World Heritage Sites are of such importance to all of humanity that they transcend national boundaries. Kew Gardens' Outstanding Universal Value consists of its landscape, architecture, botanic collections, and contribution to plant science and taxonomy. As signatory to the World Heritage Convention, the UK Government has committed itself to ensuring the protection and management of this global treasure for future generations.

Development pressures exist within World Heritage settings in several urban and suburban World Heritage sites. This revised Management Plan provides a much expanded and improved analysis of setting for the WHS, which will provide crucial guidance to developers and decision makers when determining future planning applications.

We are grateful to the WHS Steering Group for their support in the development of this Management Plan and the key role they play in the implementation of its objectives and vision. It is through these partnerships that we can ensure that this important site is protected for the benefit of future generations.

Consideration for the impacts of Covid-19 on the tourism and heritage sectors is essential as these industries are heavily relied upon to support Kew's work. Additionally, an ability to visit the Gardens has led to a rise in the acknowledgement of the impact of nature on our physical and mental health. The current crisis will, nevertheless, bring substantial financial challenges for RBG Kew with significant loss of commercial revenue. RBG Kew has weathered difficult periods over its 260 year history, but with the tremendous dedication of all who work there and the Government's support, it will continue to thrive, reach and inspire more people, and bring authoritative expertise to address the critical challenges facing our planet in the future.

The World Heritage Site Management Plan will provide an invaluable tool for the continued protection, conservation and presentation of this very special place of Outstanding Universal Value at this challenging time and beyond.



Lord Gardiner of Kimble

Parliamentary Under Secretary of State (Minister for Rural Affairs and Biosecurity)
Department for Environment, Food and Rural Affairs.



Nigel Huddleston MP

Minister for Tourism and Heritage, Department for Digital, Culture, Media and Sport

Gardiner of Kimble

Nigel Huddleston



Palm House

Executive Summary

The UNESCO World Heritage Convention defines World Heritage Sites as ‘places of Outstanding Universal Value to the whole of humanity’. This means that their cultural and/or natural significance is ‘so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity’ (UNESCO, 2019). There is no higher recognition of heritage value globally. The Royal Botanic Gardens, Kew (RBG Kew) was inscribed onto the World Heritage List in July 2003, acknowledging the value of its unique history, diverse historic landscape, rich architectural legacy, botanic collections and its position as one of the world’s leading botanic gardens for scientific research and education.

Since the botanic gardens were first established by Princess Augusta in 1759, the site and collections have continued to grow and evolve through the work of RBG Kew’s scientists, horticulturists, educators and many volunteers. Over this time, RBG Kew has remained faithful to its original purpose, with botanists continuing to collect specimens and exchange expertise internationally. RBG Kew’s landscape, buildings and plant collections combine to form a unique testimony to developments in garden design, horticulture and botanical science that have subsequently diffused around the world.

Need for a Plan

World Heritage Sites (WHS) are recognised under the terms of the 1972 UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention). By joining the Convention, the UK Government has committed to identify, protect, conserve, present and transmit such sites to future generations. The publishing of WHS Management Plans are recommended in UNESCO’s Operational Guidelines and by the UK Government’s planning guidance and form a material consideration when determining planning decisions.

As an organisation, RBG Kew has well-developed objectives and departmental strategies, which are referenced in and linked to this Management Plan. The primary purpose of the WHS Management Plan is to bring together the key strands of each departmental strategy into a single document, setting the management framework for sustaining the ‘Outstanding Universal Value’ (OUV) of the RBG Kew WHS. RBG Kew recognises the profound responsibility of the WHS designation, and its objectives are embedded across RBG Kew’s mission and strategy.

Setting

The WHS Management Plan has been prepared at a time of increased development in the wider city beyond the WHS, as reflected in the number of applications currently coming forward for major development along the Great West Corridor in Brentford. The WHS has a very specific set of relationships with its setting, which are an integral part of its design, its experience and therefore of its OUV.

Management of change within the wider environs of the WHS is critical to the conservation of OUV. Existing development in the setting of the WHS has already harmed the site’s OUV and our ability to appreciate it. Further unsympathetically designed and/or sited development would result in increased cumulative harm. Management of such development is therefore key, and a detailed analysis of setting for the WHS has been included as part of this Management Plan to guide developers and support relevant decision makers with regard to planning applications for developments.



Bluebells in the Natural Area

RBG Kew's vision and principles for management

The Royal Botanic Gardens, Kew's mission is to be the global resource for plant and fungal knowledge, building an understanding of the world's plants and fungi upon which all our lives depend.

To manage the WHS so that its OUV is conserved and enhanced, RBG Kew will:

- continue to set the standard as the world's premier botanic garden, and develop its role as a leader in plant research, collections, conservation and horticultural practice;
- underpin the sustainable management and evolution of the site by conserving and enhancing its outstanding historic designed landscape and architectural heritage;
- enhance the quality of visitor facilities and achieve new levels of excellence in visitor management and experience as one of the UK's top visitor destinations;
- continue to balance key roles as a centre for scientific research and major visitor destination with conserving Kew Gardens' outstanding assets;
- enhance the quality of on-site facilities for the collections, research and staff, allowing for the incorporation of new opportunities for public engagement and intellectual access;
- interpret RBG Kew's scientific role and heritage to a larger and more diverse audience, and promote innovative public education programmes;
- continue the Gardens' long tradition of contemporary landscape design.

Effective management of the WHS is concerned with identification and promotion of change that will respect, conserve and enhance the site and its OUV, and avoid or mitigate changes that might damage them. The aim of the WHS Management Plan is to set the appropriate balance between conservation, access and interpretation, interests of our visitors and the local community, and sustainable economic use of the WHS.

Preparation and Implementation of the Plan

RBG Kew is the lead body responsible for preparing and implementing the Plan in cooperation with its on-site and off-site partners. The WHS has a dedicated Steering Group tasked with overseeing the implementation of its objectives and vision. The Steering Group also acts as a multi-agency liaison panel to ensure that the site and its values are properly taken into account in wider decisions that may impact the OUV of the WHS.

The WHS Management Plan is an operational and planning document, to be used by RBG Kew and key stakeholders to inform policy decisions, assist in planning decisions, inform capital development planning and revenue expenditure, and aid discussion with potential funding partners. The WHS Management Plan's objectives and actions can be achieved through a range of projects, from capital projects to maintenance plans. The availability of funding will determine the rate of implementation, but equally important is a certain flexibility to allow the plan to respond to government funding fluctuation and project sponsorships. The Action Plan which concludes the WHS Management Plan provides the basis from which to monitor progress towards achieving the WHS Management Plan objectives and will be reported against at the WHS Steering Group meetings. The WHS Management Plan will be reviewed again in 2025 and evaluation of the plan's success and any changes will inform the development of the next Management Plan.



Economic botany collection jars

RBG Kew's commitment to racial equality

This Management Plan was written before the events of summer 2020 and the worldwide impact of the Black Lives Matter movement. It is widely recognised that systemic change is needed for a more inclusive and equitable society. As with many institutions, RBG Kew is urgently re-evaluating its approach to racial equality, both within its staff, students and volunteers, and in its interactions with visitors and overseas partners.

RBG Kew established a working group on Diversity, Equality and Inclusion in 2019, with the brief to focus on Kew's staff and build on the recognition that diversity and inclusion must be embedded in our culture and our workforce. The strategy developed by the working group is under consultation and forms the basis of a work programme starting in autumn 2020. In response to the events of 2020, a 'Decolonising Kew' working group was also formed. It aims to enrich our understanding of RBG Kew's history, reveal those contributors that have been overlooked and re-examine our current practices to ensure the highest standards of ethics and equity in our work. This cross-directorate group has a broad brief, encompassing Kew Gardens' history, current science, and public engagement, working closely with the Diversity, Equality and Inclusion group.

Some of the aims of Decolonising Kew already appear in this Management Plan, for example reaching audiences that would not normally visit Kew Gardens or engage with our digital products and developing research into Kew's history. We recognise the need to bring more diverse voices to our research, for example through widening the range of our academic collaborations. Understanding Kew's history is also fundamental to understanding its impact on the practice of science today and the group is looking at contemporary issues such as access to Kew's data and collections, and equity in international collaborations. When engaging the public in the Gardens, we are considering how to present multiple voices, recognising that the plants we grow and the stories they tell will determine whether these are truly gardens for all.

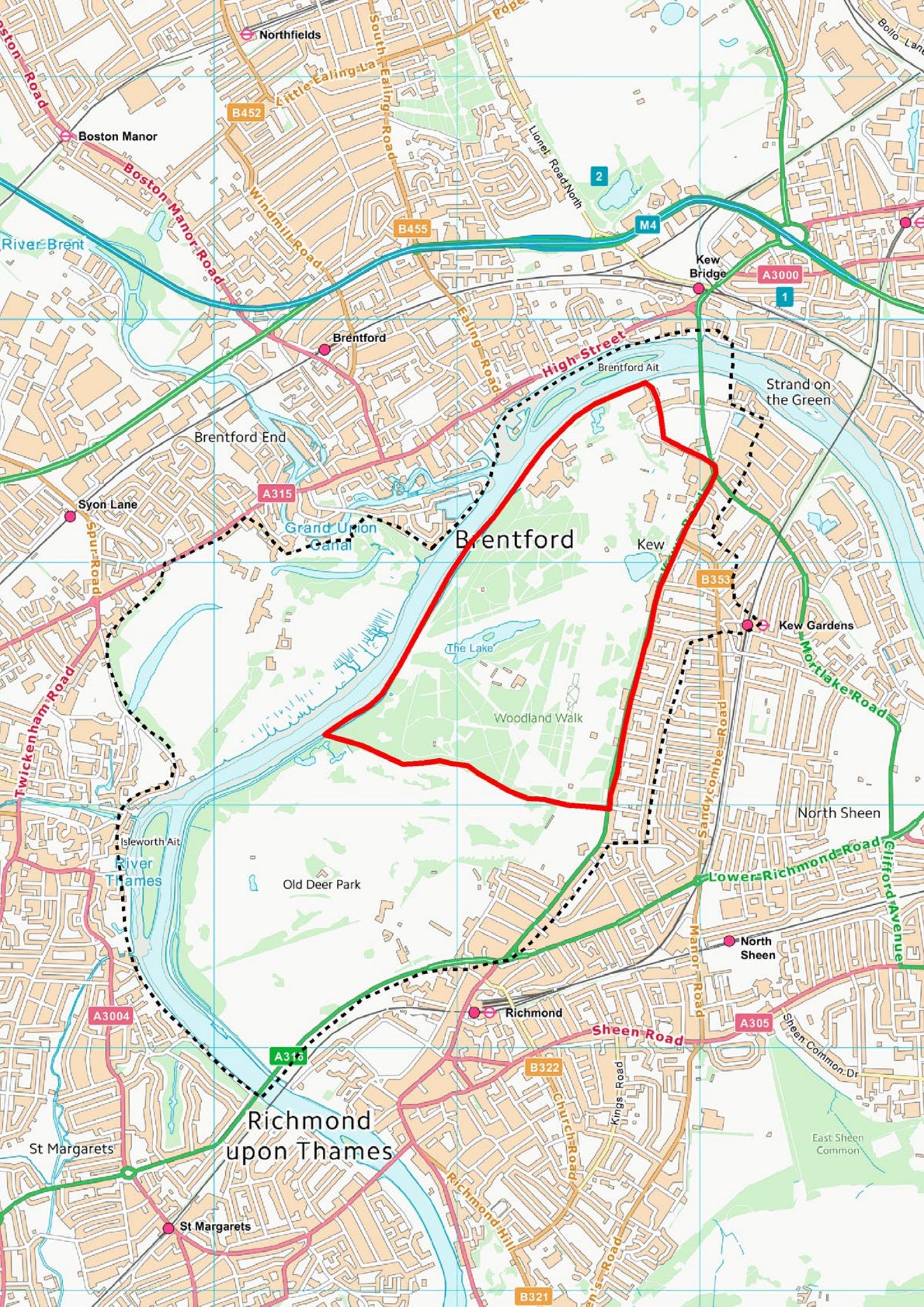
The Decolonising Kew group will highlight areas of good practice as well as make recommendations for change. It will report in Spring 2021 with recommendations for immediate and longer-term actions. These are only the initial stages of a continuing project. The central aim of this work must be to ensure that all Kew's staff, students and volunteers are skilled and confident in recognising issues of equity and inclusion in their work, and that they have institutional support in working together to do better. Our understanding of Kew Gardens' history is key to its designation and management as a World Heritage Site and this work will play a critical role in the re-evaluation and development of the next Management Plan. It will also play an important role in widening the participation and engagement of all communities in the Kew Gardens World Heritage site, further supporting a key strategic objective of the World Heritage Convention.



Syon Vista and the Palm House

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Introduction

The Royal Botanic Gardens, Kew was inscribed onto the World Heritage List in July 2003, acknowledging the value of its unique history, diverse historic landscape, rich architectural legacy, botanic collections and its position as one of the world's leading botanic gardens for scientific research and education. The UNESCO World Heritage Convention defines World Heritage Sites as 'places of Outstanding Universal Value to the whole of humanity'. This means that their cultural and/or natural significance is 'so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity' (UNESCO, 2019). There is no higher recognition of heritage value globally.

Since the botanic gardens were first established by Princess Augusta in 1759, the landscape and collections have continued to grow and evolve through the work of RBG Kew's scientists, horticulturists, educators and many volunteers. The WHS's landscape, buildings and plant collections combine to form a unique testimony to developments in garden design, horticulture and botanical science that have subsequently diffused around the world.

RBG Kew's mission today is to be the global resource for plant and fungal knowledge, building an understanding of the world's plants and fungi upon which all our lives depend. Using the power of RBG Kew's science and the rich diversity of the Gardens and collections, it will provide knowledge, inspiration and understanding of why plants and fungi matter to everyone. As a World Heritage Site, RBG Kew will continue using the strengths of its accumulated collections and knowledge to focus on addressing the urgent needs of society today, whilst continuing to protect and cherish our globally significant and unique heritage.

The primary purpose of the World Heritage Site Management Plan is to sustain the Outstanding Universal Value (OUV) of the WHS, ensuring its effective protection, conservation, presentation and transmission to present and future generations. To sustain the OUV of the WHS, it is necessary to manage all the attributes of OUV, and it is these attributes that have informed the nine key priorities for the Plan.

The Management Plan sets the overarching strategy for achieving these objectives, balancing the needs of conservation, access and the sustainable use of the site. The support of the WHS's external partners is critical to the success of the Management Plan and they have been consulted throughout the preparation and implementation of the Plan as members of the WHS Steering Group.

1.1. The need for a Plan

World Heritage Sites (WHSs) are recognised as places of ‘Outstanding Universal Value’ (OUV) under the terms of the 1972 UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention). By joining the Convention, the UK Government has committed to identify, protect, conserve, present and transmit such sites to future generations. It is for each government to decide how to fulfil these commitments and in England, the Department for Digital, Culture, Media and Sport (DCMS) acts as the UK ‘State Party’ to the Convention, advised by Historic England. England’s WHS are protected through statutory heritage designations and the spatial planning system. At RBG Kew, an annual grant is provided to contribute to the care of the estate from RBG Kew’s government sponsor, the Department for Environment, Food and Rural Affairs (Defra). WHS Management Plans are recommended in UNESCO’s Operational Guidelines and the UK Government’s planning guidance and are a material consideration when determining planning decisions.

As an organisation, RBG Kew has well-developed objectives and departmental strategies, which are referenced in and linked to this Management Plan. The primary purpose of the WHS Management Plan is to bring together the key strands of each departmental strategy into a single document, setting the management framework for sustaining the OUV of the WHS. We recognise the profound responsibility our WHS designation bestows upon us as an organisation and its objectives are embedded across RBG Kew’s mission and strategy.

The management of change is key to the effective conservation of the site and its OUV. We recognise that to remain a sustainable and dynamic organisation some change is inevitable to respond to the needs of present-day society and our long-term sustainability. Effective management of the WHS is therefore concerned with identification and promotion of change that will respect, conserve and enhance the site and its OUV, and avoid or mitigate changes that might damage them. The aim of the WHS Management Plan is to set the appropriate balance between conservation, access and interpretation, interests of our visitors and the local community, and sustainable economic use of the site.

1.2. The World Heritage Site

The Royal Botanic Gardens, Kew covers an area of 132 hectares (330 acres) and is situated in the London Borough of Richmond upon Thames, in south-west Greater London, UK. The boundary of the WHS aligns predominately with the administrative boundary of RBG Kew, barring twelve residential and commercial properties along Kew Green, which are under private ownership (see Appendix E). There are four properties under the care of Historic Royal Palaces; Kew Palace (also known as the Dutch House), its associated Royal Kitchens, Queen Charlotte’s Cottage and the Pagoda.

The WHS buffer zone: covers an area of 350 hectares and extends across areas within the London Boroughs of Richmond upon Thames and Hounslow (see Figure 1). Buffer zones are identified in the Operational Guidelines

for the Implementation of the World Heritage Convention (2019) as an optional measure for supporting the protection of the OUV of a World Heritage Site. Not all World Heritage Sites have a buffer zone nor do all sites require them. The buffer zone of the RBG Kew WHS encompasses areas of land with strong historical relationships to the Gardens (the Old Deer Park, Syon Park and Kew Green), some locations that are important to the protection of significant views (e.g. Syon Park), and areas that have a bearing on the character and setting of the gardens (the River Thames and its islands between Isleworth Ferry Gate and Kew Bridge, and approaches to the Gardens from the east). The buffer zone does not encompass all of the setting of the WHS and change outside of the buffer zone could affect the setting of the WHS.

1.3. Ownership and governance of the site

The Board of Trustees of the Royal Botanic Gardens, Kew (RBG Kew) is a non-departmental public body and an exempt charity under the provisions of the Charities Act. It is a statutory incorporation established under Section 23 of the National Heritage Act 1983 ('NHA'), which sets out the statutory functions and powers of RBG Kew. Defra is RBG Kew’s government sponsor and principal regulator for charity law purposes.

The land and buildings of the RBG Kew estate are the hereditary property of the Crown, managed by RBG Kew on behalf of the Secretary of State (SoS) for Defra. It does not form part of the Crown Estate which is managed by Crown Estate Commissioners. The estate is occupied and managed by RBG Kew under the 1984 Ministerial Direction, which directs RBG Kew to exercise the minister’s functions in relation to the management of the estate. Whilst RBG Kew has management control of the land at Kew, some restrictions still apply to the use of the land.

The strategic and operational management of RBG Kew is directed by the Board of Trustees, 11 of which are appointed by the SoS and one is appointed by Her Majesty the Queen. Further detail on the framework within which RBG Kew and Defra operates can be found in our Framework Document (2018) published online here: www.kew.org/about-us/reports-and-policies

The day-to-day management of RBG Kew is the responsibility of the Director, who is appointed by the Board of Trustees with the SoS’s approval. The Executive Board is made up of the directors of each of the directorates within Kew and manages the day-to-day activities on behalf of the Trustees.

Four of the historic properties on site are under the care of Historic Royal Palaces (HRP). HRP is a Royal Charter Body with charitable status. It is a public corporation but receives no public funding and all costs are met by self-generated income. The organisation is contracted by the SoS for DCMS to manage the unoccupied royal palaces on behalf of Her Majesty the Queen. HRP is supervised by a Board of Trustees, all of whom are non-executive. The Chief Executive of HRP is accountable to the Board of Trustees.

The WHS has a dedicated Steering Group tasked with overseeing the preparation of the management plan and the implementation of its objectives and vision. The group also acts as a multi-agency liaison panel to ensure that the site and its values are properly taken into account in wider decisions that may affect it. The group meets twice annually to review progress and discuss any key issues facing the site.

A World Heritage Site coordinator post was created in 2018 to bring focus to World Heritage objectives across the organisation. The post ensures the effective liaison and coordination of activities between internal and external partners.

Appendix A illustrates RBG Kew's governance structure and Section 14 (pg.79) lists the WHS Steering Group members.

1.4. Legislation and policy

The WHS contains and is part of a number of designations including:

Registered historic park and garden (Grade I) – the WHS lies within and forms part of the wider registered historic park and garden which also encompasses areas of the Old Deer Park to the south.

Two conservation areas – the WHS is contained entirely within two conservation areas designated by the London Borough of Richmond upon Thames, namely 'Kew Green' and the 'Royal Botanic Gardens, Kew'.

Fifty-six individual listed buildings and structures, including six Grade I and seven Grade II* listed buildings.

A scheduled monument at Kew Palace (also Grade I listed).

In this context, the following briefly summarises some of the key elements of legislation, policy and guidance that are relevant to the management of the WHS. A fuller description can be found in Appendix B.

Relevant international, national and local conventions, legislation, policy and guidance include:

- UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)
- Operational Guidelines for the Implementation of the World Heritage Convention, UNESCO (July 2019)
- Venice Charter (1964)
- Planning (listed buildings and conservation areas) Act 1990 (as amended)
- Ancient Monuments and Archaeological Areas Act 1979
- National Planning Policy Framework (2019)
- National Planning Practice Guidance (online resource – re-issued October 2019)
- National Design Guide, 2019
- London Plan (2017 – consolidated with alterations since 2011)
- Draft New London Plan (in particular policy HC2 World Heritage Sites)

- Hounslow Local Plan (2015–2030)
- Richmond Local Plan (2018)
- Old Deer Park, Crown Estate Landscape Strategy Report (1999)
- London's World Heritage Sites – Guidance on Settings, SPG (2012)
- Mayor of London's All London Green Grid Supplementary Planning Guidance (2012)
- Historic England, The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning Note 3 (Second Edition – Dec. 2017)
- Historic England (Greater London Archaeological Advisory Service), Guidelines for Archaeological Projects in Greater London (Revised April 2015)
- European Landscape Convention (2000)
- The Convention for the Protection of the Architectural Heritage of Europe (Granada, 1985)
- The European Convention on the Protection of Archaeological Heritage (Valletta, 1992)
- The Thames Landscape Strategy Hampton to Kew (1994) and The Thames Landscape Strategy Review (2012)
- Kew Gardens (Leases) Act 2019
- National Heritage Act 1983

The inscription of the Royal Botanic Gardens, Kew onto the World Heritage List places a significant obligation on the UK Government, under the terms of the 1972 Convention, to do all that it can, and to the utmost of its resources, to protect, conserve, present and transmit to future generations the Outstanding Universal Value of the WHS. This obligation includes the management of change outside of the site that may affect its OUV, as well as the management of change within the site and support for its continued maintenance and conservation. In terms of managing change, the effective implementation of legislation and national, London-wide and local planning policy provides the primary mechanism for meeting these obligations.

The Planning (listed buildings and conservation areas) Act 1990 (the LBA 1990) provides legal protection and consenting mechanisms for listed buildings and conservation areas. As set out in Section 8, the WHS contains 56 listed buildings and is wholly contained within a conservation area. The act makes provision for the physical protection of listed buildings, through a listed building consent regime, and also the protection of their setting. Section 66 of the LBA 1990 requires decision makers to '*...have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses*'. In relation to conservation areas, Section 72 of the Act states that '*...special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area*'. These aspects are particularly relevant to the management of the WHS and also of its setting.

The Ancient Monuments and Archaeological Areas Act 1979 is relevant to the management of Kew Palace.

In terms of National Planning Policy, Section 16 of the NPPF provides clear direction for planning authorities on the determination of applications affecting designated and non-designated heritage assets, including World Heritage Sites, listed buildings, conservation areas, scheduled monuments and registered historic parks and gardens. Paragraph 184 recognises that World Heritage Sites are of the highest significance; and as set out in paragraph 193 very great weight must therefore be given to the conservation of their significance (OUV) and their setting. Paragraphs 194–196 provide key policy tests for developments that would harm the significance of designated assets (including World Heritage Sites). These clearly indicate that change in the setting of an asset can be harmful to its significance.

The accompanying National Planning Practice Guidance (NPPG) describes how heritage assets can be affected by physical change, but also by changes in their setting. Through understanding the significance of a heritage asset, and the contribution of setting to its significance, it will be possible to understand potential impacts and acceptability of development proposals within and outside of a WHS. NPPG makes it clear that changes to the setting of an asset can result in substantial harm. NPPG provides detailed guidance on the treatment of WHSs in the planning process and requires decision makers to protect WHSs from the effect of changes which are relatively minor but which, on a cumulative basis, could have a significant effect.

The current London Plan sets out in Policy 7.10: World Heritage Sites, that: '*Development in World Heritage Sites and their settings, including any buffer zones, should conserve, promote, make sustainable use of and enhance their authenticity, integrity and significance and Outstanding Universal Value*' and goes on to state that '*Development should not cause adverse impacts on World Heritage Sites or their settings (including any buffer zone). In particular, it should not compromise a viewer's ability to appreciate its Outstanding Universal Value, integrity, authenticity or significance. In considering planning applications, appropriate weight should be given to implementing the provisions of the World Heritage Site Management Plans*'. This reflects policy in the NPPF.

The draft London Plan will replace the existing London Plan. Policy HC2 provides reinforced protection for the WHSs stating that '*...Development proposals in World Heritage Sites and their settings, including any buffer zones, should conserve, promote and enhance their Outstanding Universal Value, including the authenticity, integrity and significance of their attributes, and support their management and protection. In particular, they should not compromise the ability to appreciate their Outstanding Universal Value, or the authenticity and integrity of their attributes.*' And that '*Where development proposals may contribute to a cumulative impact on a World Heritage Site or its setting, this should be clearly illustrated and assessed in the Heritage Impact Assessment.*' It also states that '*Up-to-date World Heritage Site Management Plans should be used to inform the plan-making process, and when considering planning applications, appropriate weight should be given to implementing the provisions of the World Heritage Site Management Plan.*'

The London Plan is supported by the 'London's World Heritage Sites – Guidance on Settings' SPG (2012) (the SPG). This provides a clear methodology for assessing impacts, which reflects Historic England guidance and ICOMOS's guidance on the assessment of impacts on cultural heritage sites (2011).

Hounslow Local Plan policies CC3 and CC4 are relevant. CC4 (Heritage) states that all developments should '*Conserve and take opportunities to enhance any heritage asset and its setting in a manner appropriate to its significance*' and that developments should '*Conserve and enhance the internationally recognised Outstanding Universal Value of the Royal Botanic Gardens Kew World Heritage Site, its buffer zone and its setting, including views to and from the site*'. CC3 (Tall Buildings) states that tall buildings should '*Be carefully designed and sensitively placed so as not to have a significant adverse impact on the setting of, views from and between heritage assets including Royal Botanic Gardens Kew World Heritage Site, Syon Park and the Thames foreshore landscape...*' and that they should that '*Not have a significant adverse impact on the setting of, or views from heritage assets including Gunnersbury Park, Royal Botanic Gardens Kew World Heritage Site, Syon Park and Osterley Park*'.

The London Borough of Richmond upon Thames Local Plan (2018) includes policy (LP 6) specifically concerning the Royal Botanic Gardens, Kew WHS. LP 6 states that '*The Council will protect, conserve, promote and where appropriate enhance the Royal Botanic Gardens, Kew, World Heritage Site, its buffer zone and its wider setting. In doing this, the Council will take into consideration that:*

- *The World Heritage Site inscription denotes the highest significance to the site as an internationally important heritage asset.*
- *The appreciation of the Outstanding Universal Value of the site, its integrity, authenticity and significance, including its setting (and the setting of individual heritage assets within it) should be protected from harm.*
- *Appropriate weight should be given to the Royal Botanic Gardens, Kew World Heritage Site Management Plan and the Royal Botanic Gardens, Kew, Landscape Master Plan.*

Historic England's Setting of Heritage Assets, Good Practice Advice in Planning Note 3 (2017) (the HE Setting Guidance) defines setting and explains how it can contribute to the significance of a historic asset. It sets out the principles for assessing the impact of development within the settings of historic assets.

Historic England's Guidelines for Archaeological Projects in Greater London provides a framework for archaeological projects across London consistent with the European Convention on the Protection of the Archaeological Heritage (Valletta 1992), the NPPF and professional best practice.



Princess of Wales Conservatory

1.5. Previous plans and site studies

RBG Kew's first WHS Management Plan was submitted as part of the nomination for inscription as a World Heritage Site in 2003. This plan also provided the framework for the Royal Botanic Gardens, Kew Site Conservation Plan (Chris Blandford Associates, 2003), which gives a more detailed site analysis and sets policies focused primarily on the conservation of the physical environment of the site. The Site Conservation Plan was complementary to the Conservation Plans being prepared by Historic Royal Palaces (HRP) for their properties within the Gardens. Together, the WHS Management Plan, RBG Kew's Corporate Plan and the Site Conservation Plan have provided the framework for sustainable management and evolution of the WHS over the last 16 years.

In 2014 the WHS Management Plan was updated, building on the learnings of the previous Management Plan, as well as incorporating recommendations from other commissioned site plans and studies. The summary below lists some of the key studies that have informed RBG Kew's management of the site since inscription on the World Heritage list:

2002 – Site Development Plan: Framework for Future Development (WilkinsonEyre Architects)

2005 – A Study into the Development of the Northern Riverside Site (WilkinsonEyre Architects)

2010 – Landscape Masterplan (Gross.Max Landscape Architects)

2013 – Kew Gardens Study (Heatherwick Studio)

2015 – North Eastern Zone Strategic Development Study (WilkinsonEyre Architects)

2016 – Estate 2025 – Kew Gardens Phase 1, Enabling our Corporate Strategies (Montagu Evans, Equals & Colley Associates)

2017 – Royal Botanic Gardens, Kew Phase II Masterplan Report (Grimshaw).



Temple of Aeolus

The Royal Botanic Gardens, Kew

2.1. Summary history

The site of the Royal Botanic Gardens, Kew has evolved over several centuries from two separate focal points in the settlements of Richmond and Kew. As the site of several successive royal palaces, Richmond has exerted a strong influence on the development of Kew Gardens, most notably in the Tudor and Georgian periods when Kew developed as a preferred residence for royal courtiers and other people of influence. Kew Gardens became the site of a number of large houses lining Kew Green and the Thames. One of these, the 17th-century Dutch House of a rich merchant, later became the Georgian Kew Palace.

During the 18th century, first the royal Richmond Gardens expanded north-east along the Thames from Richmond and then the royal Kew Gardens expanded south-west from the settlement of Kew. The two gardens were initially divided from each other by high brick walls lining a public road. Both 18th-century gardens were developed by their royal patrons in conjunction with iconic Georgian landscape gardeners.

Leading figures of the English landscape movement all worked on either the Kew or Richmond Garden, or on both, as was the case with William Kent. Bridgeman, Kent, Chambers and ‘Capability’ Brown all made their mark, creating not just Arcadian landscapes to be admired, but intellectually, politically and emotionally-charged places to be inhabited, explored, understood and enjoyed. There are tantalising hints in documentary sources of spectacular evening events created at Richmond by Kent for Queen Caroline and George II.

In a unique historical development that has defined the history of the site, for two decades from 1731 to 1751, Richmond and Kew became the focus of competitive garden building as a tool for contrasting political expression between the estranged mother and son, Queen Caroline and Frederick, the Prince of Wales. During 1731 to 1751, Frederick built several of the historic features that still define Kew Gardens to this day – his Great Lake partially survives as the Palm

House Pond; his incomplete Mount Parnassus now houses the Temple of Aeolus; and the remains of the Great Lawn still provide the setting for his wife Augusta’s classical Orangery.

Augusta continued the development of Kew Gardens’ reputation as an internationally trendsetting Georgian garden after Frederick’s early death in 1751. She continued to expand the Gardens to the south, commissioning William Chambers and others to build follies in this new area – some of which were reputedly constructed overnight. Many of the follies were flimsy structures, of wood, lath and plaster, but some were more substantial. Of Augusta’s garden we still have the Pagoda, Ruined Arch and Orangery in their original locations with original fabric; some, such as the Temple of Aeolus, have later been rebuilt *in-situ*, whilst others, such as the Temples of Arethusa and Bellona, have been relocated. As one element of this carefully designed landscape, Augusta started the Physic and Exotic Garden in 1759, and this is generally taken as the founding date for the Royal Botanic Gardens, Kew.

First Richmond then Kew Gardens came into the ownership of George III after the death of his grandfather, George II, in 1760, and his mother, Augusta, in 1772. George III swept away Caroline’s formal gardens at Richmond and commissioned ‘Capability’ Brown to install his trademark naturalised landscape in their place, a design that still influences the Richmond side of the Royal Botanic Gardens. Brown had previously worked at Syon Park across the Thames river and visually linked the two parks together into one larger landscape design, making the Thames the ultimate Brownian water feature.

By contrast, the overall structure of Augusta’s Kew Gardens was changed far less by George III. Acquiring the nickname ‘Farmer George’, he turned the entire estate of Kew and Richmond into an elaborate *ferme ornée*, turning some areas of grass into arable land, and breeding ‘improved’ animals

in the gardens. Over the course of his ownership he united the two gardens into one, tearing down the high walls that divided them, and unsuccessfully sought to create a new palace, first at Richmond then at Kew Gardens. Having demolished both his parents' and grandparents' houses in the process, these were then abandoned before completion.

Under George III, the physical space occupied by his mother Augusta's Botanic Gardens did not substantially alter. However, his appointment of Joseph Banks as the Superintendent of the Botanic Gardens brought a step change in its reputation. The highly ambitious Banks enjoyed a close relationship with George III and used this influence both to his advantage and for the Gardens. By 1800, Kew Garden's reputation and influence had grown to such an extent that virtually no ship left India or any other colony without some living or preserved specimen for Kew.

After the deaths of George III and Joseph Banks in 1820, the Gardens went into decline, despite some ongoing royal patronage. The future of the Gardens was brought into question during a Treasury review in 1837, with a formal Parliamentary Committee being set up to examine Kew Gardens in 1839. Intensive lobbying during this period finally brought the recommendation that the Gardens be made into the new national Botanic Garden and its management be transferred from the Crown to the government.

The 45-year period under the directorship of first William Hooker and then his son Joseph Hooker (1841–1885) is one of the defining periods of the new Royal Botanic Gardens, Kew, when the Victorian landscape design and buildings were implemented, and the reputation of the Gardens was firmly established. It saw the establishment of two of the keynote glasshouses, the Palm House and the Temperate House; the laying out of the National Arboretum; the founding of the Herbarium collection; and the restructuring of the Gardens by William Nesfield and Decimus Burton. This Victorian overlay onto the earlier Georgian gardens, with its strong vistas and formal walkways, areas of dense tree-planting, and iconic buildings, is one of the defining characteristics of the character of the Gardens today.

For the first time both Richmond and Kew Gardens were conceived of as a single landscape. Emanating from the central point of the Palm House, and integrated into the design of its formal parterres, were Nesfield's three vistas – the Syon Vista, Pagoda Vista and the now less formal Cedar Vista. These vistas formally united the Arboretum and Botanic Gardens into a single strong landscape, and the surviving vistas still structure the landscape today. Decimus Burton reorganised the formal entry into the Gardens, designing his new Main Gate (now the Elizabeth Gate) to create a grand and visually prominent entrance from Kew Green. From the Main Gate, Burton built the Little Broad Walk to take the visitor into the Gardens, from where they could sweep left and promenade down the Broad Walk with its formal plantings, past the Orangery, and straight to the Palm House at the heart of the reinvented Gardens.

The arrival of the railway to Kew Bridge in 1849 and then Kew Gardens in 1869 brought the site's role as a visitor

attraction more to the fore. During the 20th and 21st centuries, Kew Gardens has continued to develop the Georgian and Victorian landscape, going through phases of physical development and decline, and all the while developing the institution's international importance and reputation as a unique scientific institution and visitor/educational attraction.

With the transition into a national Botanic Garden in 1840, Kew's scientific purpose began to evolve, becoming closely aligned to the needs of the British Empire. The Gardens, became essential to the developing Empire, supplying seed, crops and horticultural advice to the colonies. The introduction of new crops and agricultural techniques had a substantial influence on biodiversity across the planet and many of these crops still form the basis of many agricultural economies today. The Gardens developed close links with the colonies, which became a focus for collecting activities. RBG Kew's collections have since built up over the past 170 years and their composition often reflects the priorities being addressed at the time of their collection, for example capitalising on the economic potential of plants such as *Hevea brasiliensis* (the source of rubber) or exploring the horticultural potential of exotic floras. As a result, RBG Kew's accumulated collections provide an exceptional record of plant and fungal diversity through time and space.

With the decline of the British Empire, RBG Kew's emphasis moved towards a conservation and research ethic. These values underpin RBG Kew's mission today: to be the global resource for plant and fungal knowledge. Plants and fungi hold the key to help solve the global challenges of biodiversity loss, climate change and food security, through the fundamental life-giving processes they drive, the properties they contain, and the materials and food they provide. Research at RBG Kew continues to utilise the strengths of its heritage, accumulated collections, knowledge and data to address these urgent challenges.

It is due to this rich, unique and irreplaceable heritage and ongoing vision that the Royal Botanic Gardens, Kew, were recognised with World Heritage Site status in 2003.

Appendix C and the Site Conservation Plan contain fuller descriptions of the site's rich and complex history.

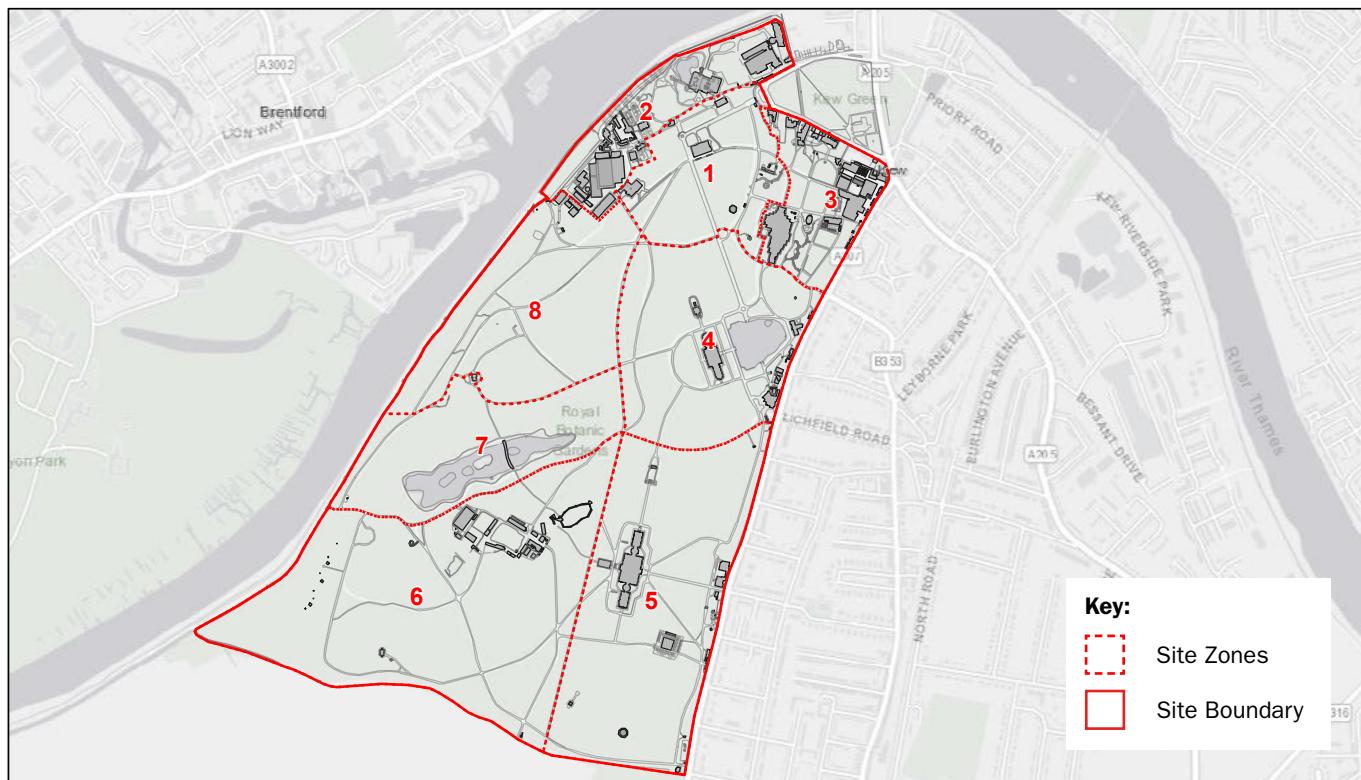
2.2. The site today

RBG Kew's 2002 Management Plan identified and described a series of eight zones within the WHS. The summarised and updated characteristics of these zones are described below:

1. Entrance Zone

This zone encompasses the historic core of the Gardens including Kew Green, the Tudor White House (demolished 1802 and the remains of which were recorded by Time Team in 2002) and the site of the original Botanic Gardens founded in 1759. Kew Green used to extend as far as the Dutch House where it intersected with Love Lane, which divided Kew Gardens from Richmond Gardens, and led to the Brentford Ferry.

Figure 2: Kew Gardens character zones



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The character of this zone is relatively mixed, consisting of open lawn areas interspersed with trees and plantings. These are crossed by a number of formal pathways, often with avenue plantings, including Nesfield's Broadwalk and the Little Broadwalk. The southern end of this zone is characterised by a large, open area of grass, marking the site of the 40-acre Great Lawn which formerly lay in front of the White House and the Orangery. Key structures include the Grade II* Nash Conservatory and the Grade I listed Orangery. Entrance into the Gardens here is from Kew Green via the historic Elizabeth Gate (the original Main Gate), which is now the second most utilised entrance by the visiting public.

2. Riverside Zone

The Riverside Zone occupies a strip of land that originally lay outside Kew Gardens and Richmond Gardens. The boundaries of the zone are largely based on the land plots of historical private buildings and their gardens. The oldest building on the WHS, the 17th-century Dutch House (also known as Kew Palace) is located here. This Grade I listed building was built as a merchant's riverside villa, and later became a royal residence. Behind the Dutch House is a small, 1960s formal garden designed in a 17th century style to complement the building.

The northern end of the zone is dominated by the Herbarium and is an important focus for scientific activity on the Site. Between the Herbarium and the Dutch House is the Sir Joseph Banks Centre for Economic Botany. This building was constructed in 1990 and is not open to the public.

South of this is the Lower Nursery Complex, Quarantine House and the Building and Maintenance Yard. The majority of this area is not open to public access and is well screened from Kew Palace, which is a key public attraction for this part of the Gardens and is viewed from across the Great Lawn.

3. North Eastern Zone

Historically this zone consisted of small houses and gardens set in linear plots extending from Kew Green, and in squarer plots lining Kew Road. Many of these were incorporated into Kew Gardens in a piecemeal manner during the 18th, 19th and 20th centuries. Currently the buildings around the outside edges of this zone are used for administrative and residential purposes. Many of these buildings are also historically interesting and are statutorily listed.

Within the Gardens, this area is characterised by small discrete garden areas, including the Aquatic Garden, Grass Garden and the Rock Garden. Kew Gardens' two newest and most technologically advanced glasshouses are located here: the Davies Alpine House and the Princess of Wales Conservatory. The zone is predominately open to the public, with some private staff buildings, including the Jodrell Laboratory and Melon Yard along the north-eastern perimeter. The location of the Jodrell Laboratory and the new Evolution Garden (formerly the Order Beds) in this zone makes it a particularly important focus for scientific activity on the site.

4. Palm House Zone

This zone forms the heart of the 1840s Nesfield and Burton landscape design, layered on top of the earlier 18th-century Kew Gardens landscape. This has resulted in a variety of landscape character areas, ranging from small plots of open lawn to formal flowerbeds, terraces with seats, an ornamental lake, clumps of mature trees and open vistas. In all, the zone represents an unusual mix of high Victorian design, 18th-century formality and 20th-century intervention.

The zone is dominated by its keynote buildings, particularly the Grade I listed Palm House. Dividing the landscape are Nesfield's three vistas, the Syon Vista (leading to the Thames), the Pagoda Vista (to the Pagoda) and the Cedar vista (to a Cedar of Lebanon). Kew's principle visitor entrance point Victoria Gate is located here, serviced by a popular shop and café. The location of the Victoria Gate, combined with the attraction of the highly visible and iconic Palm House, makes this zone a 'honeypot' for visitor activity.

5. Pagoda Vista Zone

Historically, the Pagoda Vista Zone was part of Kew Gardens and was, and still is, focused on the Grade I listed Pagoda, a significant surviving architectural element of William Chambers' designs. The Pagoda became a major axis for the Nesfield/Burton landscape design, with establishment of the Pagoda Vista. Decimus Burton's Grade I listed Temperate House (1859–1899) is another keynote building which dominates the western half of the zone. The Temperate House is the largest public glasshouse at Kew and the world's largest surviving Victorian glasshouse. Opposite this are the Marianne North and Shirley Sherwood galleries, which display important botanical art collections and associated exhibitions.

The newly build Pavilion restaurant is located in this zone, further facilitating this zone as a popular visitor area. Whilst Lion Gate public entrance is located in the south eastern corner of this zone, the majority of visitors approach from the north of the site.

6. South Western Zone

The South Western Zone was historically part of Richmond Gardens and contains, in its far south-west corner, the archaeological remains of a formal garden canal that used to run north-west from Richmond Lodge. In the 18th century Bridgeman, Kent and 'Capability' Brown redesigned the gardens to create a more naturalistic woodland/parkland landscape. Later a rustic cottage was built, incorporating an earlier menagerie, for Queen Charlotte. This building remains and forms a focal point for visitors in the area.

Today this zone forms the heart of the Arboretum and includes the conservation area, which has been managed for native species diversity. The Stable Yard and new Arboretum Nursery at the centre of this zone act as the operational base for the horticultural and arboricultural management of the Gardens. The Treetop Walkway provides a popular attraction, drawing visitors into this part of the Gardens.

7. Syon Vista Zone

Like the Pagoda Vista Zone, the Syon Vista Zone marks a major axis in the Nesfield/Burton landscape. The zone was originally part of Richmond Gardens, but is now predominately influenced by the 19th-century designs of Nesfield and the Hookers. The zone is dominated by the Vista and the later lake, both of which were located within a clearing in the historic landscape of Richmond Gardens. The Sackler Crossing was installed in 2006 to improve connectivity across the Gardens and open up access to the centre of the garden. The zone contains a key view to Syon House and up along the River Thames and is perhaps the most visited area in the western half of the site.

8. Western Zone

As with the previous two zones, the Western Zone was historically part of Richmond Gardens. It has a mixed character with discrete but interrelated botanical garden areas linked by collections of trees. These garden areas include important collections such as the Bamboo Garden, established in 1891–2, which now holds the largest collection of bamboos in the UK and the Azalea Garden, which was first established in 1882 and will be replanted in 2020.

The zone also contains a number of surviving historic landscape features, such as 'Capability' Brown's Hollow Walk, now known as the Rhododendron Dell, and also the ha-ha between the Gardens and the Thames. The Western Zone was historically associated with the Thames and prior to Brown's landscaping in the late 18th century was the site of Bridgeman's much-celebrated Riverside Terrace. The zone still has strong physical and visual links with the Thames, although 19th- and 20th-century century plantings have partially obscured these links in effort to screen out visually encroaching development along the opposite side of the river. This vegetation also provides a valuable function as a windbreak for the Gardens, an attribute discovered after the great storms of 1987 and 1990.

2.3. Collections

Kew Gardens houses one of the largest and most diverse botanical and mycological collections in the world, containing over 8.5 million items and representing approximately 95% of the world's vascular plant genera and 60% of fungal genera. The care and protection of the collections is one of RBG Kew's primary statutory duties, ensuring they are kept 'as national reference collections, secure that they are available to persons for the purposes of study' (National Heritage Act, 1983). Kew's collections lie at the heart of our strategic aim to be the global resource for plant and fungal knowledge, forming the central objective in RBG Kew's corporate strategy. As a key attribute of OUV as a World Heritage Site, the collections need to be well managed, widely accessible and

secure. Our major scientific collections include the Herbarium, Spirit Collection, Fungarium, Economic Botany Collection, Seed Collection, DNA and Tissue Bank, Microscope Slide Collection, In Vitro Collection, and linked digital resources. These collections provide an exceptional record of plant and fungal diversity through time and space. Kew Gardens' collections continue to grow by approximately 38,000 new specimens a year – from herbarium sheets to microscope slides, artefacts, seeds, leaf tissue and DNA. The collections are global in scope, containing specimens from all continents, with a focus on vascular plants (ferns, lycopods, gymnosperms and flowering plants) and fungi (including lichens and fungal analogues such as oomycetes).

Table 1: An overview of Kew's Science Collections

Collection	Approximate size*	Description
Herbarium	7,000,000	Preserved dried vascular plant specimens ¹ . The number of species represented is unknown but the current Herbarium catalogue, which covers 12% of the collection, represents 187,500 species.
Spirit Collection	76,000	Specimens ¹ of plants, plant parts and fungi preserved in spirit, representing almost 30,000 species.
Fungarium	1,250,000	Preserved dried fungi, lichens and fungal analogues such as oomycetes and myxomycetes. An additional 1,100 fungal cultures are stored in liquid nitrogen. The number of species represented is unknown but the current Fungarium catalogue, which covers 40% of the collection, contains 52,000 species.
Economic Botany Collection	100,000	A broad range of samples ² documenting the use of plants by people, including 42,000 wood collections. Approximately 20,000 species are represented.
Seed Collection	86,000	Living seed collections ³ held in the Millennium Seed Bank, with over 2 billion individual seeds representing around 38,600 species. An additional 20,000 preserved seed samples from herbarium sheets are held for taxonomic reference.
DNA & Tissue Bank	58,000	48,000 samples ² of plant genomic DNA stored at -80°C, and 10,000 silica-dried tissue samples at room temperature – together representing around 35,000 species.
Microscope Slide Collection	150,000	Microscope slides documenting plant and fungal anatomy, including c. 40,000 slides of pollen, c. 36,000 slides of wood and c. 10,500 slides of fungi. The number of species represented is unknown but the current database, which represents 37% of the collection, contains 30,600 species.
In Vitro Collection	6,000	Living plants and fungi cultured on agar. Comprises 1,000 <i>in vitro</i> plants of over 20 species of orchids, and 5,000 cultures of mycorrhizal and non-mycorrhizal fungi corresponding to 600 genetically distinct isolates covering c. 200 identified species.

* The exact size of the larger collections and the precise number of species contained within them is unknown, and the sizes given for these therefore represent an estimate based on our knowledge of the collection and those specimens that have been digitised.

¹ A specimen = material collected from a single plant or fungal species at a given location and a given time.

² A sample = tissue or DNA collected/extracted from a single plant at a given time.

³ A collection = a group of related specimens. In the case of seed collections these represent seeds gathered from the same individual or same population at the same time.

Complementary to the Science Collections, Kew Gardens also holds the largest and most diverse living plant collections in the world. Containing more than 68,000 accessions of over 27,000 taxa, they span the landscapes, glasshouses and nurseries across the Kew Gardens and Wakehurst sites and include plants from tropical, temperate, arid, boreal and alpine environments. Referred to as Kew's Living Collections, these plants are grown for a defined purpose, which includes reference, research, conservation, education or ornamental display. Kew's Living Collections are utilised by RBG Kew's scientists and horticulturists for cutting edge research and conservation, and they form the basis for innovative interpretation and a vast programme of training and education, in addition to playing an important role as part of the Kew Gardens landscape aesthetic.

Alongside this, Kew holds one of the most important botanical reference sources in the world in the Library and Archives. This collection contains several million items, including books, botanical illustrations, photographs, letters and manuscripts, periodicals, biographies and maps. The holdings extend back to the 14th century and include most of the important works relating to botany ever published. The Art collections include illustrations which are ancillary to the herbarium type specimens as well as those documenting the visual characteristics of plants and fungi, alongside special collections of work by some of the great botanical illustrators. All these collections are used to support RBG Kew's science and horticulture but are also frequently consulted by visitors from across the globe to support their research in a diverse range of academic disciplines. The Archives collections comprise original source material on Kew Gardens history as well as the papers of botanists and plant collectors.

Table 2: An overview of Kew's other major collections

Collection	Approximate size	Description
Library	300,000	Printed books, journals and pamphlets covering the worlds of plant and fungal science and horticultural history, including: naming, classification and uses of plants and fungi; plant ecology and conservation; wild plants of the world; botanic gardens and herbaria worldwide; the history of gardening and garden design; and the development of botanical illustration.
Art	200,000	Prints and drawings assembled over the last 200 years and ranging in date from the 18th century to the present day. Additional works on paper, portraits, photographs, and three-dimensional objects.
Archives	7,000,000 sheets of paper in 4,600 collections	Unpublished material comprising correspondence, field notebooks and photograph albums, records of plants received at Kew and sent out from Kew, and maps and plans tracing the development of the Gardens.
Living Collections	68,000 accessions*	Living plants in the gardens and glasshouses at Kew and Wakehurst, representing over 22,000 taxa.

* An accession in this context consists of one or more living plants derived from the same collection.

2.4. Science

RBG Kew has been recognised as a global centre of excellence in the study of plant diversity and economic botany since the late 18th century. Particularly notable is the role RBG Kew played in the translocation of plants across the British Empire during the 19th and 20th centuries, which resulted in the establishment of new agricultural economies and fundamentally influenced global biodiversity. This economic role enabled RBG Kew to develop world-class research and scientific facilities and facilitate a long history of scientific discovery and innovative research.

Today, RBG Kew employs over 300 scientists, and research stretches from the discovery and identification of new species, to the impact of climate change on threatened habitats. RBG Kew's work makes an invaluable contribution to solving some of the biggest challenges facing humanity, revealing the importance of plants and fungi in our everyday lives.

RBG Kew has six research departments which are supported by the Library, Art and Archives and the Office of the Science Directorate:

Collections – Managing Kew's scientific collections of over 8.5 million items, representing over 95% of known flowering plant genera and approximately 66% of the known genera of fungi.

Biodiversity Informatics and Spatial Analysis – Applying computational techniques to analyse, edit, curate, organise, mine and disseminate data and to evaluate trends and patterns through time and space.

Comparative Plant and Fungal Biology – Understanding the principles that determine plant and fungal diversity and applying this knowledge to the global challenges of today.

Conservation Science – Undertaking rigorous, evidence-based research and conservation activities to improve the global outlook for biodiversity.

Identification and Naming – Species discovery, naming and curation, and undertaking accurate taxonomy – the bedrock on which all of Kew's pure and applied science is based.

Natural Capital and Plant Health – Research on plant and fungal natural assets and the ecosystem services they underpin in order to enhance the societal benefits arising from them.

2.5. Education

Education is a major priority for RBG Kew, with responsibility under the 1983 Heritage Act to use the collections as a resource for public reference, education and enjoyment. RBG Kew offers education at every level, from doctoral degrees to horticultural training and school visits. Education and engagement of the public has, alongside RBG Kew's scientific role, become fundamental to the funding and future development of the World Heritage Site. As one of the foremost plant and fungal research institutes, RBG Kew has a responsibility to pass on its knowledge, skills and expertise to the next generation of plant and fungal scientists. To achieve this RBG Kew aims to further grow its cohort of PhD and MSc students, and develop a portfolio of short courses.

RBG Kew's MSc in Plant and Fungal Taxonomy, Diversity and Conservation was launched in 2015 in partnership with Queen Mary University of London. The course is a one-year, full-time course providing students with an in-depth understanding of plant and fungal taxonomy and diversity, along with a thorough grounding in molecular systematics, evolutionary biology and conservation policy, theory and practice. Graduates of this MSc develop the knowledge and skills to conduct PhD training in any area of taxonomy, molecular systematics, ecology, evolution, or more applied conservation work. The cross-disciplinary skills acquired during the course also open up career opportunities in academia, government, industry, consultancy, public engagement and non-governmental organisations.

Horticulture students come from around the world to study at Kew Gardens for the world's foremost qualification in botanical horticulture – the three-year Kew Diploma. The Kew Diploma has been running since 1963 and offers broad-based training in amenity and botanical horticulture. The curriculum provides a unique combination of practical and theoretical study, providing the opportunity to study top-level scientific and technical subjects, whilst gaining practical experience and responsibility working with one of the most comprehensive botanic collections in the world. Alongside this, RBG Kew also offers a two-year practical apprenticeship and one-year specialist certificates in Horticulture.

There is an extensive schools programme and Kew Gardens is annually visited by over 90,000 children in organised school parties. Guided by RBG Kew's Schools Learning Strategy, staff offer hands-on education sessions designed around inquiry-based learning. The sessions link directly to the curriculum

and to RBG Kew's science work. There are also a range of courses and learning activities for adults, from photography and horticulture to wellbeing and botanical illustration.

2.6. Visitor attraction

Since its transition into a national Botanic Garden in 1840, the usage of Kew Gardens has grown from that of a world-renowned scientific plant collection to a major visitor attraction. Engagement of the public is a key objective for RBG Kew under the 1983 Heritage Act and has increasingly become a fundamental necessity for the Gardens' sustainability and future development as a World Heritage Site. There is a continuous need for Kew Gardens to broaden its appeal and relevance as a visitor attraction as it is set within in a highly competitive London visitor attraction market, with several of the world's most popular visitor attractions at Kew Gardens' doorstep.

In the last couple of years, Kew Gardens has achieved record-breaking visitor numbers, growing from just over 860,000 in 2001/02 to 2 million in 2018/19. This much needed rise in visitor numbers has largely been driven by an increased event offer, including Christmas at Kew, concerts, outdoor sculpture exhibitions and festivals. Key moments like the opening of the Hive in 2016, the Temperate House in 2018 and the Children's Garden in 2019 have proved particularly popular, alongside outdoor exhibitions including Chihuly (2005 and 2019) and Henry Moore (2007–08).

Kew Gardens' position alongside the River Thames offers significant opportunity for attracting further tourism. Between Hampton and Kew, the river landscape, with its historic buildings and waterfronts and its parks and open space, is without parallel in any other capital in the world.

2.7. Setting of the site

Appendix D describes the setting of the WHS in detail. The following provides a summary.

The Royal Botanic Gardens, Kew WHS directly descends from the world of Georgian royalty, as a country retreat for relaxation and pleasure distant from the city. The gardens were first carved from the agricultural fields beyond Kew, a rural settlement on the banks of the Thames and an enclave of the royal court since Elizabethan times. Using the backdrop of this quiet rural retreat, the internationally influential Georgian landscape designers and architects who worked at both Richmond and Kew created magical worlds for their royal patrons, separated from the everyday world outside. Bridgeman, Kent, Chambers and later 'Capability' Brown reorganised nature into a more artfully picturesque Arcadian vision. They planted trees, constructed earthworks and lakes, invented follies and designed walkways to display the landscapes to their best advantage, and to create fantastical, exotic and 'otherworldly' experiences for their clients.

Though the two royal gardens were quite different in the detail of their design, their characters were equally theatrical with large-scale and extensive landscaping studded by exotic follies joined by rides and pathways. Where the gardens

abutted public roads, they were protected by high brick walls; alongside the Thames parts of Richmond Gardens opened out to encompass the Arcadian rural view and to connect to the neighbouring Syon Park and House over the river in a feat of outstanding landscaping ambition.

When a part of the Gardens was thrown open to the public for the first time in 1841, the site still retained this element of privacy. In an increasingly urban and industrial environment, the secluded, rural aspect of the new Kew Gardens became a treasure to be prized. This element was actively valued and enhanced by the Victorian and Edwardian directors of the new Kew Gardens even against an outcry of public opinion, which demanded the Kew Road walls torn down. The Victorian landscape designs developed by Nesfield for the first director, Sir William Hooker, reinforced this sense of seclusion from surrounding urban encroachment by designing a series of internally focused vistas, only one of which looks externally, across the Thames to Syon Park. The dramatic architecture of the new glasshouses and their exotic plantings, coupled with the retention of the Pagoda and of other Georgian follies, retained the strong experience of escape from the city. When industrial development in Brentford threatened to intrude upon the gardens, the directors launched successive campaigns of tree planting to shut them out, with the secondary effect of shutting out the Thames from most of the Gardens and increasing the sense of seclusion and enclosure.

The Royal Botanic Gardens, Kew succeed in being simultaneously rural and exotic, through the centuries of accumulated landscape design implemented there by some of the most influential Georgian and Victorian landscape designers. This rurality and exoticness are conserved and reinforced by the strong sense of enclosure and separation, which allows the Gardens to be experienced singularly within its high walls and boundary tree plantings. This sense of enclosure underpins the character and OUV of the WHS. However, this enclosed ‘otherworldliness’ is not the only notable aspect of the site’s setting and its contribution to the OUV of the WHS – other key factors include:

- i Views and vistas: as would be expected in an 18th and 19th-century designed landscape views and vistas are a key element of the Gardens design, these include;
 - Intended views to and from the sequence of follies, buildings, mounds and landscape features across the 18th-century designed landscapes of Caroline’s Richmond Garden and Frederick and Augusta’s Kew Garden;
 - Views along and from the formal vistas and walks of Burton and Nesfield’s 19th-century Botanic Garden and views of keynote Victorian buildings; and
 - Defined views into (and out of) the Gardens on approaches to and around the gates.
- ii Walks, promenades and routes: All the phases of the WHS’s landscape design since the 18th century have been dynamic in their intention – places to move around, explore and to have experiences within. The WHS is, and always was, intended to be experienced in a mobile manner and not through a series of fixed views or viewpoints.
- iii Bounded areas of openness and ‘big sky’: Kew Gardens’ landscape is dominated by trees which restrict views and create an enclosed sense of place, but there are landscape features that are more open where there are strong internal views across the bounded open space. These include the Great Lawn, Palm House Pond, Rose Garden and terraces, Temperate House terraces, Agius Evolution Garden, Sackler Crossing, the Banks lawn and Kew Green. The intersection of Syon and Cedar Vistas along the banks of the Thames is also of note.
- iv Relationship with the Thames: Kew Gardens is one of a series of parks and estates along the River Thames’ south-western reaches. Historically, the Richmond Gardens utilised the Thames as part of its landscape design and this can still be experienced in places, such as at the terminus of the Syon Vista. For the most part the Gardens are now separated from the Thames by informal tree and shrub planting along western boundary of the site running alongside the Thames towpath. This vegetation performs a valuable screening function as well as a windbreak against prevailing winds funnelling down the Thames.
- v Relationship with Kew Green: Kew Green lies partially within the WHS and largely within its buffer zone. It provides one of the key approaches to the WHS to and from the Elizabeth Gate. Its open ‘village green’ character contributing much to the sense of arrival and exit, creating a sense of entering somewhere different from the bustle of the metropolis. It also forms a core element of the setting of a number of historic listed buildings within the WHS that flank the southern edge of Kew Green.
- vi Relationship with the Old Deer Park: To the south the Gardens sit alongside the Old Deer Park. Historically, the Richmond Gardens side of Kew Gardens was united with the Old Deer Park, forming part of the same Georgian landscape, and they still form part of the same registered historic park and garden. Although the landscapes are now visually separated by planting and woodland regeneration, the relationship between them is fundamentally important due to their shared evolution as historic designed landscapes in the 18th century.
- vii Entrances and exits: Kew Gardens has hosted public visits throughout its history and its boundaries are punctuated by gateways (historic and modern), some still in use, some closed. These provide an important element of the visitor experience and also define many views into and out of the site. Key gates include Elizabeth Gate, Queen’s Gate, Victoria Gate, Lion Gate and Brentford Gate.
- viii Setting of individual buildings: Many of the buildings in the WHS make a direct contribution to its OUV, including (but not limited to) the Palm House, Temperate House, Princess of Wales Conservatory, Waterlily House, Davies Alpine House, Kew Palace, Queen Charlotte’s Cottage, the Pagoda, Temple of Aeolus and the Orangery. Other historic buildings on the site are also of note. The setting of each of these buildings makes a contribution to their significance and consequently to the OUV of the WHS.



- ix Their settings are designed to be internal, but can be negatively impacted by visual intrusions external to the Gardens.
- x Experiences beyond the visual: Most of the WHS is a relatively quiet place, away from the noise and the bustle of the city. This is an important aspect of its character. The absence of visual intrusion from the outside world also reinforces this sense of escape. However, there are detractors. The site is close to Kew Road with the smell and sound of traffic, while the regular drone and roar of the planes overhead on the Heathrow flightpath is a frequent intrusion into the atmosphere of the Gardens
- xi Seasonal nature of the site and its setting: Kew Gardens is a seasonally diverse site and seasonal display has been deliberately enhanced through planting selection. Views become restricted in late spring as deciduous

trees come into full leaf, and open up again in late autumn, as leaves fall. The boundary plantings at Kew Gardens are essential for the maintenance of the enclosed character of the Gardens, and this becomes more vulnerable to outside influences after leaf fall. Alongside visual impacts, road noise and fumes carry further across the site when deciduous trees are out of leaf.



Trees being lit during Christmas at Kew

3. Outstanding Universal Value

3.1. Statement of Outstanding Universal Value

The World Heritage Site at the Royal Botanic Gardens, Kew was inscribed by UNESCO in 2003. A new Statement of Outstanding Universal Value (OUV) was adopted in 2010. The Brief Synthesis of this Statement of OUV states (UNESCO 2010):

'Set amongst a series of parks and estates along the River Thames' south-western reaches, this historic landscape garden includes work by internationally renowned landscape architects Bridgeman, Kent, Chambers, Capability Brown and Nesfield illustrating significant periods in garden design from the 18th to the 20th centuries. The gardens house extensive botanic collections (conserved plants, living plants and documents) that 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, plant systematics and economic botany.'

The landscape design of Kew Botanic Gardens, their buildings and plant collections combine to form a unique testimony to developments in garden art and botanical science that were subsequently diffused around the world. The 18th-century English landscape garden concept was adopted in Europe and Kew's influence in horticulture, plant classification and economic botany spread internationally from the time of Joseph Banks' directorship in the 1770s. As the focus of a growing level of botanic activity, the mid 19th-century garden, which overlays earlier royal landscape gardens, is centred on two large iron framed glasshouses – the Palm House and the Temperate House – that became models for conservatories around the world. Elements of the 18th- and 19th-century layers – including the Orangery, Queen Charlotte's Cottage, folly temples, Rhododendron Dell, boundary ha-ha, garden vistas to Williams Chambers's Pagoda and Syon Park, iron-framed glasshouses, ornamental lakes and ponds, and herbarium and plant collections – convey the history of the Gardens' development from royal retreat and pleasure

garden to national botanical and horticultural garden, before becoming a modern institution of conservation ecology in the 20th century.'

Specifically, the site was inscribed under three UNESCO criteria for World Heritage Sites, which are:

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 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 has 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.

Integrity

The boundary of the property contains the elements that bear witness to the history of the development of the landscape gardens and Kew Gardens' uninterrupted role as national botanic garden and centre of plant research. These elements, which express the Outstanding Universal Value, remain intact. The buffer zone contains the focus of one of the garden vistas on the opposite bank of the Thames River – Syon Park House – together with other parts of the adjacent cultural landscape (Old Deer Park, a royal estate south of Kew Gardens; Syon 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). Development outside this buffer zone may threaten the setting of the property.

Authenticity

Since its creation in the 18th century, Kew Gardens has remained faithful to its initial purpose with botanists continuing to collect specimens and exchange expertise internationally. The collections of living and stored material are used by scholars all over the world.

The 56 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 are being 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. Recent projects such as recutting Nesfield's beds behind the Palm House have started to interpret and draw attention to the earlier landscapes created by Capability Brown and Nesfield. Other projects are proposed in the overall landscape management plan subject to resourcing.

3.2. Attributes of OUV

Attributes are physical elements, and tangible or intangible aspects or processes of the property that express and convey its OUV. For properties with retrospective Statements of OUV, such as the Royal Botanic Gardens, Kew, the Attributes are founded in, and derived from, the Statement of OUV including both the Brief Synthesis and Criteria for Inscription, and the Statements of Integrity and Authenticity.

The protection, conservation and management of the OUV of the WHS is therefore achieved through the protection, conservation and management of the Attributes. It is therefore important that the Attributes of the property are robustly identified and described.

Using the key elements derived from the SOUV, the following six Attributes for the Royal Botanic Gardens, Kew WHS have been defined. These were identified in the 2014 Management Plan for the property and have been defined for this new Management Plan.

- i a rich and diverse historic cultural landscape providing a palimpsest of landscape design;
- ii an iconic architectural legacy;
- iii globally important preserved and living plant collections;
- iv a horticultural heritage of keynote species and collections;
- v key contributions to developments in plant science and plant taxonomy.

The following section takes each of these Attributes in turn, describes them and outlines how they relate to the key elements of the Statement of Outstanding Universal Value (namely Brief Synthesis including Criteria; Integrity; and Authenticity).

3.2.1. Attribute 1: A rich and diverse historic cultural landscape providing a palimpsest of landscape design

The Royal Botanic Gardens, Kew tells the national story of our historically changing relationships with plants, within the context of a multi-phase historic designed landscape. From internationally influential gardens by pre-eminent 18th-century designers for their royal clients; to royal interest in plants as a tool of empire, under George III and Joseph Banks; to the struggles of the Victorian Hookers to establish botany as a widely respected science with economic power; to the modern organisation with international plant conservation at its core.

Every phase of development has been accompanied by seminal landscape design by internationally renowned landscape architects, illustrating significant periods in garden design from the 18th to the 20th centuries. Always building on the pre-existing landscape, sometimes incorporating what went before; sometimes sweeping everything away in their path. The resulting rich and diverse cultural landscape tells a unique story with international relevance, a palimpsest of landscape design reaching from royal pleasure garden roots alongside the Arcadian Thames to modern botanic garden.

The unique historic cultural landscape of the Royal Botanic Gardens, Kew works as a series of interlocking powerful historical statement pieces that directly illustrate themes of royal political gardening and seminal landscape design, national empire building, scientific endeavour and conservation action, all of which have been highly influential on the national and international stages.

All of the garden's main phases are captured in extensive historical accounts, including private and commercial artworks, books, maps, letters and diaries; some elements survive as archaeological deposits, and some elements are still extant as physical features to be enjoyed in the landscape, often in relationship with their wider setting and the River Thames.

Key surviving physical features of the property's historic cultural landscape include:

- i The Victorian garden lay-out designed as a collaboration between Sir William Hooker, William Nesfield and Decimus Burton, with its set-pieces around iconic buildings, and vistas and promenades stretching across the landscape;
- ii Remaining aspects of William Chambers 'Anglo-Chinese' garden style, particularly the Great Pagoda;
- iii Remaining aspects of 'Capability' Brown's landscape design including plantations, landform (including Rhododendron Dell) and the ha-ha connection to the Thames and Syon Park beyond;
- iv Strongly enclosed sense of 'otherworldliness' within the high walls and tree shelterbelts;

Davies Alpine House



- v Its relationship with the River Thames, and in particular with surviving elements of the Arcadian landscapes of the Thames;
- vi Ability for visitors to roam freely across the landscape to encounter set key views and to develop personalised experiences of the gardens, landscape features and iconic buildings contained within;
- vii Archaeological remains of all phases of the gardens, including former Charles Bridgeman and William Kent landscape structures;
- viii Key heritage trees and plants that survive from each phase of design, and which tell particular stories, such as the wisteria that once adorned the 18th century Great Stove.

I. Linkage to Brief Synthesis and Criteria

The SOUV Synthesis takes the historic cultural landscape at the property as one of its key significances, both in the ground breaking and international influence of its design and key designers, and in the intimate interplay between scientific endeavour and landscape design; historic landscape design enabling, reflecting and making manifest key developments in botanical and horticultural understanding. It also stresses the relationship between the designed landscape and the River Thames, along with other parks and gardens stating that Kew is '*Set amongst a series of parks and estates along the River Thames' south-western reaches...*'.

This attribute supports criteria (ii) and (iii) as the distinct phases of landscape design at the property were trendsetting across Europe and beyond. In the 18th century, under its royal patronage, the property was a crucible for the development of the English style of landscape gardening, which spread across Europe, whilst in the 19th century Kew Gardens was the pre-eminent design model for botanic gardens across the world. The attribute also supports criterion (iii) as many of the changes in garden design demonstrate in physical form historic changes in botanical understanding, such as developments in botanic and horticultural experimentation, in international botanic plant transport and in taxonomy and plant systematics.

II. Linkage to Integrity

The property's integrity is directly dependant on the historic designed landscape, its features and character, remaining intact within the site and its buffer zone, and being unimpacted by developments without. The 'otherwordly' character of Kew Gardens is directly dependant on the property's visual envelope being conserved and preserved, unpunctured by external features. Maintaining the relationship with the River Thames at key points within the landscape is also important to the integrity. The site's integrity is already impacted by some tall buildings and is at risk of being significantly diminished by the cumulative impact of further visual intrusions or degradation of its relationships to the Thames and environs.

III. Linkage to Authenticity

The property's historic cultural landscape makes a direct contribution to the property's authenticity, with key landscape features being conserved and enhanced, such as vistas and

the immediate landscape settings of iconic buildings, and ensuring that these are not impacted by changes within the site and its buffer zone, or wider setting. The property has a high authenticity of materials and design within its historic landscape, fundamentally underpinned by the landscape's historically long-standing and internationally significant continued use for botanic and horticultural experimentation, research and exchange.

3.2.2. Attribute 2: An iconic architectural legacy

The Royal Botanic Gardens, Kew are home to a unique and distinguished architectural heritage, including some of Britain's most iconic buildings and the world's most iconic garden structures. Most instantly recognisable are the Chinese-inspired splendour of the Great Pagoda and the curvilinear elegance of the technologically innovative Palm House. Following its successful restoration, the Temperate House is now once again recognised as a Kew Gardens icon.

The architecture of the Royal Botanic Gardens, Kew, is a series of superlatives that have inspired architectural endeavours across the world. At the time of its construction in 1762, the Great Pagoda was the tallest Chinese architectural-style building in Europe and spawned copies across Europe, including in royal gardens in Sweden and Germany, such as the Englischer Garten, Munich.

Also constructed for Princess Augusta by William Chambers, the Orangery (1761) was once the largest glasshouse in Britain. This was the first of many glasshouses on the property, several of which were at the cutting edge of architectural and technological design, and which together tell the internationally significant story of glasshouse development over more than 250 years. The Palm House was, at the time of its construction (1848), the largest curvilinear metal framed glasshouse in Europe; it was still the largest at the time of WHS inscription and probably remains so today. After the long-awaited final completion of the Temperate House in 1898, it was the largest glasshouse in the world and remains the largest Victorian glasshouse to be found anywhere across the globe.

The property's history as an 18th century royal retreat alongside and linked to the River Thames has left a rich architectural legacy captured in its archaeology, in the documentary record and in notable instances, as buildings still standing in the landscape – including the Ruined Arch, Queen Charlotte's Cottage and several temples. The garden buildings on the site were at the nexus of the development of 18th century garden architecture, being inspired by, and in turn inspiring, garden structures across Britain and Europe.

Alongside the garden follies and glasshouses, the property contains a striking collection of royal palaces and ancillary buildings, with the White House kitchen and Kew Palace standing as key survivors, whilst the White House and the Castellated Palace both survive as archaeological deposits. Alongside Kew Green, the property contains an important collection of domestic-scale properties variously used as royal nurseries and as homes for members of the extended royal families and close associates.

Less well-recognised, but integral to the identity of Kew Gardens, are the high brick walls along Kew Road. These represent the privacy afforded to the royal family in their 'otherworldy' 18th century Gardens, as well as the Victorian battle for the property's primary identity as a scientific institution, resisting demands for the walls to be thrown down for open public access. The walls contain a series of gates, some still in use, most of which each illustrate a key phase in the property's history and its carefully negotiated relationship with the outside world.

I. Linkage to Brief Synthesis and Criteria

The SOUV synthesis highlights the unique strengths and international influence of the site's iconic architectural legacy. It recognises the architectural legacy arising from each phase of the property's distinguished history, from royal retreat on the Thames and pleasure garden to national botanical and horticultural garden before becoming a modern institution of plant and fungal science and conservation.

This attribute supports Criteria (ii) and (iv) as it recognises the strong international artistic influence of the property's architecture and its relationship with the beginnings of the English Landscape movement. Criterion (iii) is also supported through the intimate relationship between the property's glasshouses and the advances in botanical and ecological science at the Royal Botanic Gardens, Kew. The glasshouses were not simply a striking symbol of the scientific research undertaken at the site, they also directly facilitated it by providing an enhanced range of plant growing conditions, which they continue to do.

II. Linkage to Integrity

The property contains a large number of historic buildings, which make a direct contribution to its integrity. This integrity is threatened by development outside the buffer zone, which may impact on the settings, and thus integrity, of individual buildings within the WHS.

III. Linkage to Authenticity

Kew Gardens buildings are physical witnesses to key phases in the property's history, built in a range of architectural styles authentic to their time of development, and retaining their authenticity in terms of design and materials. Many buildings retain the functions for which they were originally intended, whilst sympathetic reuse has often been found for those buildings whose use has been superseded for technical or other reasons, such as the use of the Orangery as restaurant, retaining the elegant open interior space. The immediate landscape settings of some of the buildings remains largely authentic, such as the vistas leading to the Pagoda, or the vestiges of the 18th-century Great Lawn and the later Broad Walk in front of the Orangery.

3.2.3 Attribute 3: Globally important preserved and living collections

The Royal Botanic Gardens, Kew holds the largest and most diverse living and preserved botanical and mycological collections in the world, from living plants to dried specimens, and from seeds to tissue samples. They are a significant part of our global scientific and natural heritage, with strong

implications for global biodiversity and human wellbeing, whilst many individual items are also of significant cultural heritage value.

The preserved collections represent approximately 95% of vascular plant genera and 60% of fungal genera. They extend across both time and space, with significant holdings going back to the 17th century and spanning the globe. Within these exemplary holdings are collections made by some of the keynote scientists in botany's history, including Charles Darwin, Alexander von Humboldt and Joseph Hooker. Of exemplary distinction are the Fungarium (largest, and one of the oldest in the world) and Herbarium (one of the largest in the world). They are both particularly rich in type specimens, which act as standards for identifying the correct name for a plant. The Herbarium holds 330,000 type specimens, representing well over a quarter of the world's scientifically named plants.

Within the living collections every plant is grown for a defined purpose, which includes reference, research, conservation, education or ornamental display. Some of these plants are extinct in the wild; others represent threatened floras from different habitats around the world. As with the preserved collections, many individual living plants are of significant cultural heritage value, such as the world's oldest potted plant, the Eastern Cape giant cycad (*Encephalartos altensteinii*), planted in 1775. The living collections are also an intrinsic element of the internationally significant historic designed landscape at the property.

Underpinning the living and preserved plant collections, the Library, Archive, Art and Economic Botany collections provide invaluable documentary and contextual information, including original collector's notes in the extensive Archives, and, in the extraordinary Economic Botany collections, physical examples of plants being used for different purposes around the world. The published works in the world-class Library extend back to the 14th century and include most of the important works relating to botany ever published.

The scientific collections, with their exceptional time-depth and global spread, are central to the internationally significant historic and ongoing mission of the Royal Botanic Gardens, Kew, and lie at the heart of the property's strategic aim to be the global resource for plant and fungal knowledge. All these collections are used to support RBG Kew's science and horticulture and are frequently consulted by visitors from across the globe to support their research in a diverse range of academic disciplines.

The scientific collections are not static and continue to grow by approximately 38,000 new specimens a year. As a working scientific resource, elements of the living and preserved collections may necessarily go through major periods of change; for example, the locations of individual items within the Herbarium may be readjusted to reflect new taxonomic understandings. It is this continual use, expansion and refinement that maintains the international significance of these collections.

I. Linkage to Brief Synthesis and Criteria

The SOUV Synthesis highlights the extensive botanic collections at the site, which have underpinned RBG Kew's '*significant and uninterrupted contribution to the study of plant diversity, plant systematics and economic botany*' and which are foundational to the botanical science that has diffused around the world from RBG Kew. The SOUV outlines how the living and preserved collections help tell the historically significant story of the development of the property from royal retreat to national botanical garden and modern scientific institution.

This attribute contributes to Criterion (ii), which recognises the richness of the property's collections, and their historical development since the 18th century as an integral part of RBG Kew's work in scientific and economic botany. This attribute also contributes to Criterion (iii), as RBG Kew's advances in many scientific disciplines are necessarily contingent on the collections that underpin this work.

II. Linkage to Integrity

The property maintains its integrity through continuing its '*uninterrupted role as national botanic garden and centre of plant research*', and through keeping '*intact*' the collections that express this Outstanding Universal Value. This is achieved through the continued and uninterrupted use of the property for botanical science, founded on the active development of RBG Kew's living and preserved collections.

III. Linkage to Authenticity

The authenticity of the property relies on its continued use for botanic research, including the active collection, curation and development of collections, and the exchange of specimens and expertise around the globe. Access to these collections by scholars all over the world is also considered to be central to the property's authenticity.

3.2.4. Attribute 4: A horticultural heritage of keynote species and collections

The Royal Botanic Gardens, Kew's heritage species and collections tell the internationally significant story of plant collection and science over more than 260 years. From Georgian and Victorian plant collecting and translocation of species for commercial value, colonial gain, social status and horticultural interest, through the late 20th century shift to embrace a conservation and research ethic, to the present day, when RBG Kew's plant collecting is strictly controlled, and undertaken for carefully evaluated scientific and ecological conservation purposes, shared with in country partners.

The Gardens hold many unique specimens and irreplaceable heritage trees including the first introductions of many exotic species and more than 300 British Champion trees (Tree Register of the British Isles). Individually significant historical collections include the Cycad Collection, which stretches back to Joseph Banks in the 18th century, and the Orchid Collection, which is the oldest and largest of its kind.

Kew's living heritage collections have their origins in Prince Frederick's 18th century garden, with a collection of trees and shrubs expanded by his widow, Princess Augusta, and

the Earl of Bute. Augusta's Physic Garden, founded in 1759, was described by the renowned contemporary gardener, Thomas Knowlton, as having '*one of the best collections in the kingdom, if not the world*'. The landscape still contains significant heritage specimens from this time, including a wisteria which once covered the eastern end of William Chambers' Great Stove and a collection of five trees referred to as Kew's 'Old Lions', including two magnificent late Georgian oaks; the Lucombe oak (*Quercus x hispanica*) and Turner's oak (*Quercus x turneri*).

Many species new to British horticulture were introduced via Kew, particularly in the Georgian period under Joseph Banks and in the Victorian period under the Hookers. Banks sent the first Kew collectors around the world, including Francis Masson, Allan Cunningham and James Bowie. Their exploration resulted in many new species being shipped to Kew Gardens from all over the growing British Empire. Keynote species introduced under Banks directorship include Banksia, a genus named after him and *Strelitzia reginae*, (birds of paradise flower), which was first introduced in 1773 by Francis Masson. Keynote Victorian specimens include the multi-stemmed stone pine (*Pinus pinea*) planted in 1846 and Rhododendron species collected by Joseph Hooker in Sikkim Himalaya, cultivated at Kew and used to reinvigorate the Rhododendron Dell, originally landscaped by Capability Brown. *Rhododendron edgeworthii* was one of the species discovered and named by Hooker and this variety is still grown at Kew today. Hooker's collection and publication of over 25 new Rhododendron species helped start a Victorian craze for the plant in the UK, which is now ubiquitous in public parks and private gardens of the period.

Further additions continued through the last century and up to the present day, with the increase of diversity greatest in collections under glass in the Tropical and Alpine nurseries and in the display glasshouses. Recently, the focus and priority for accession of new plants has generally been to ensure that a plant is conserved ex situ, that a gap in the collection within a genus or family is filled, or that a taxon that is the subject of research is grown for observation and documentation.

I. Linkage to Brief Synthesis and Criteria

The SOUV synthesis highlights the time-depth of the extensive horticultural heritage at the site, which have arisen from and tell the story of RBG Kew's '*significant and uninterrupted contribution to the study of plant diversity, plant systematics and economic botany*', as well as the historically significant story of the development of the property from royal retreat to national botanical garden and modern conservation institution. The influence of developments in botanical science on the landscape design of the property are also highlighted.

This attribute supports Criteria (ii) and (ii), which recognise the close association of RBG Kew with scientific and economic exchanges established throughout the world in the field of botany, since the 18th century. The horticultural heritage of keynote species and collections at the site is a direct legacy of this history, and thus an integral part of the property's OUV.

II. Linkage to Integrity

The property's integrity is dependent on the 'elements that bear witness to the development of ... Kew Gardens' uninterrupted role as national botanic gardens and centre of plant research' remaining 'intact'. The horticultural heritage of keynote species and collections are integral elements of this development, both bearing witness to and deriving from the property's longstanding history as national botanic garden and centre of plant research.

III. Linkage to Authenticity

The time-depth of the property's individual specimens and collections, and the stories they illustrate of the development of the property and the scientific achievements that have been realised there, provide strong foundations for the authenticity of RBG Kew as a World Heritage Site.

3.1.5. Attribute 5: Key contributions to developments in plant science and plant taxonomy

Beginning under Joseph Banks in the 18th century, and massively expanding in the 19th century under the Hookers, the Royal Botanic Gardens, Kew, were a clearing house for plants across the British Empire, changing economies and environments across the world. Famously, the translocation of the bread fruit as a potential slave food instigated by Joseph Banks from Kew was central to the Mutiny on the Bounty. Later, under the Hookers, RBG Kew developed horticultural techniques for the transport, propagation and healthy growth of commercial plants across many climes, collecting and sending out plants and Kew-trained expert horticulturalists to British colonies. Victorian RBG Kew sat in the centre of a global network of colonial gardens, many of which are still extant, including Singapore Botanic Gardens WHS. Through this garden network, for example, William Hooker translocated *Cinchona* (anti-malarial medicine) from South America to India, and his son, Joseph Hooker, organised the growing of rubber seeds in British colonies, particularly Ceylon (Sri Lanka), Singapore and Malaya.

Alongside this strong interest in economic botany, Joseph and William Hooker fought hard to build strong foundations for RBG Kew's scientific status, and for the respectable status of botanical science. One of Joseph Hooker's key legacies was the ground-breaking and internationally-influential *Genera Plantarum* (1862–83), which he co-wrote with George Bentham and which laid the foundations for much of modern plant classification. The *Genera Plantarum* has been regularly updated and is now incorporated into the International Plant Names Index (IPNI). As a result of Hooker's work, the layout of the arboretum at RBG Kew is a living scientific artefact of this Victorian understanding of taxonomy, with trees planted in family groups that are broadly consistent with the plant families in *Genera Plantarum*.

In the 1970s and 1980s, the institution's focus permanently shifted to conservation, biodiversity and the sustainable use of plants and fungi, turning RBG Kew's considerable expertise and resources onto the critical issues facing the world today and quickly building a new international reputation as a sector-leader. Work in this field now extends across the

full range of botanical scientific activity, from aiming to bank 25% of the world's seeds by 2020, through to producing genome-scale DNA data for a representative of every genus of plant and fungus living in the world. RBG Kew's botanical scientific publication list is unparalleled, capturing the breadth and scale of the work undertaken by the 300+ scientists employed there today. Since 2015, RBG Kew has annually been producing the publication and international scientific symposium '*The State of the World's Plants*', providing an annual overview of the status of the global plant kingdom, including assessments of our current knowledge of the diversity of plants and fungi on Earth, the global threats that they face, and the policies needed to safeguard them.

RBG Kew has long been a centre of excellence for the training of horticulturalists and botanic scientists, a legacy that is maximised today through the internationally highly regarded Kew Diploma in horticulture and the MSc taught course and PhD research delivered by the science departments. There is a widely held acknowledgement of RBG Kew's international status in botanical science, and responsibility to train the next generation of plant and fungal scientists.

I. Linkage to Brief Synthesis and Criteria

The SOUV Synthesis highlights the internationally significant role of RBG Kew in contributing to the study of plant and fungal diversity, plant systematics, conservation and economic botany, which RBG Kew helped to spread around the world. The SOUV also notes the intimate two-way relationship between plant science and the historic development of landscape design, buildings and plant collections at RBG Kew, and how the physical heritage of the property tells the story of RBG Kew's development from a royal retreat to a modern institution of plant and fungal science and conservation.

This attribute directly supports **Criterion (iii)**, which is specifically about the contribution RBG Kew has made to advances in scientific disciplines, particularly botany, taxonomy and conservation. This attribute also supports **Criterion (ii)**, the recognition of RBG Kew's role in international scientific exchanges in the field of botany.

II. Linkage to Integrity

The property's integrity is dependent on the 'elements that bear witness to the development of ... Kew Gardens' uninterrupted role as national botanic gardens and centre of plant research' remaining 'intact'. This includes the continuation of RBG Kew's central purpose as a centre of excellence for botanical science, and the scientific use of the physical resources of the property, including its living and preserved collections.

III. Linkage to Authenticity

The statement of authenticity is explicit that the authenticity of RBG Kew resides in the continued practice of botanical science at the property, and the international accessibility of RBG Kew's scientific expertise and resources.

3.3. Contribution of setting to OUV

Section 2.7 and Appendix D have described the setting of the WHS. Appendix D also contains a detailed description of how the setting of the site contributes to its OUV and the appreciation of that OUV; the following summarises that.

The historic landscape design, the built architecture of the site, and the experience of place that is derived from these, are all central to the OUV of the WHS. The Gardens are, with a few key exceptions (such as Syon Vista), an internally-oriented landscape, and preserving the integrity of this setting from external intrusions plays a fundamental role in supporting its OUV. The WHS has a very specific set of relationships with its setting, which are an integral part of its design, its experience and therefore of its OUV. In summary, the setting of the site contributes to the OUV of the WHS and our appreciation of the OUV by:

- i Providing a largely unbroken skyline above the walls and boundary planting hence strengthening and maintaining the historic and continuing design intent of the WHS's sense of being a world apart, separated from the wider, urban world outside (largely due to the broadly domestic scale and form of development around the WHS).
 - ii This largely unbroken skyline enables the visitor to appreciate and understand the design intentions of the landscape architects who worked there in the various phases of the gardens, as they progressed from royal retreat and pleasure garden, to national botanical and horticultural garden, to a modern institution of conservation and ecology – a unique botanic garden set within a historic designed landscape.
 - iii Providing areas of openness and ‘big sky’, framing strong internal views across the bounded open space.
 - iv Providing visual and physical relationships westwards over the River Thames and to the wider Arcadian landscape beyond, including the designed relationships with Syon Park, which enables modern visitors to appreciate the *rus in urbe* that Kew Gardens provides, and to see the landscape through a similar lens as the historic designers who worked there, and their royal patrons.
 - v Providing the backdrop to key views and vistas including, amongst others, the Syon Vista, Broadwalk, Cedar Vista, Pagoda Vista, and other internal views such as the views over the open lawns in the Entrance Zone which reflect the historic Great Lawn.
 - vi Providing the backdrop to views of and from architectural icons on the site including the Palm House, Temperate House, Princess of Wales Conservatory, Kew Palace and the Orangery.
 - vii Providing the backdrop to views of and from the numerous historic garden buildings, follies etc. on the site.
- i The well-defined boundaries directly enable the conservation of the internationally significant living collections housed within.
- In these key ways, the setting of the WHS supports and enhances the OUV of the WHS, including its authenticity and integrity.
- Additionally, within the WHS the design, management and control of development and planting in the Gardens makes a direct contribution to the setting and significance of key buildings, helping maintain the OUV of the WHS, including its authenticity and integrity.
- Overall, the setting of the Royal Botanic Gardens, Kew WHS makes a direct and important contribution to its significance as an evolved designed landscape representing key periods in garden history and royal history. The setting of the site also makes a contribution to the setting of individual architectural icons within it and the setting of individual garden structures and temples. Much of this contribution comes from the current form and nature of the wider environs of the site and their limited visual intrusion into the site, although this contribution has and remains under threat due to existing tall buildings and other development proposals.





Scientist in the lab

4. Management of the World Heritage Site

4.1. Kew's vision

The Royal Botanic Gardens, Kew's mission is to be the global resource for plant and fungal knowledge, building an understanding of the world's plants and fungi upon which all our lives depend. We use the power of our science and the rich diversity of our gardens and collections to provide knowledge, inspiration and understanding of why plants and fungi matter to everyone. Loss of biodiversity, climate change, rapidly-spreading pests and diseases, human population growth and the associated challenges of food security are causing unprecedented stress on human societies around the world. Plants and fungi hold the key to help solve these challenges through the fundamental life-giving processes they drive, the properties they contain, and the materials and food they provide. Through increasing understanding of why plants and fungi matter, we can unlock their potential.

This is an urgent task. We face unprecedented losses of biodiversity and rapid environmental change, and risk losing the precious secrets that plants and fungi can give us before we discover them. We want a world where plants and fungi are understood, valued and conserved – because all our lives depend on them.

To manage the Royal Botanic Gardens, Kew WHS so that its Outstanding Universal Value is conserved and enhanced, RBG Kew will:

- continue to set the standard as the world's premier botanic garden, and develop its role as a leader in plant research, collections, conservation and horticultural practice;
- underpin the sustainable management and evolution of the Gardens by conserving and enhancing its outstanding historic landscape gardens and architectural heritage;
- enhance the quality of visitor facilities and achieve new levels of excellence in visitor management and experience as one of the UK's top visitor destinations;
- continue to balance key roles as a centre for scientific research and major visitor destination with conserving Kew Gardens' outstanding assets;
- enhance the quality of on-site facilities for the collections, research and staff, allowing for the incorporation of new opportunities for public engagement and intellectual access;
- interpret the RBG Kew's scientific role and heritage to a larger and more diverse audience, and promote innovative public education programmes;
- continue the Gardens' long tradition of contemporary landscape design.

4.2. Key challenges and opportunities

The primary purpose of the Management Plan is to sustain the Outstanding Universal Value of the WHS to ensure the effective protection, conservation, presentation and transmission of the WHS to present and future generations. To sustain the OUV, it is necessary to manage all the attributes of OUV, and it is these attributes that have informed the nine key priorities for the Plan. These key priorities, as well as the challenges and opportunities they present, are explored further in sections 5 to 13.

The Management Plan brings together the policies and aspirations of a number of RBG Kew departments and external bodies involved with the Kew WHS. In order to achieve the primary aim of protecting the WHS through the conservation of its OUV, this Plan provides an integrated approach to managing the WHS, where it is recognised that not all of the Plan's aims are solely within the control of RBG Kew to implement. The support of the WHS's key external partners is critical to the success of the Management Plan and these stakeholders have been consulted throughout the development of the Plan and as a member of the WHS Steering Group.

Table 3: Overview of key objectives

Priorities for 2020–2025	Key objectives
Risk and disaster management	<ul style="list-style-type: none"> 5.4.1. Identify and monitor potential threats to the site and ensure that appropriate emergency plans and strategies are drawn up and implemented to mitigate threats. 5.4.2. Ensure that RBG Kew's risk arrangements are kept under constant review and that they remain relevant and up to date. 5.4.3. Improve building compliance and precautions to mitigate against known risk of fire and flood to collections. 5.4.4. Integrate a consideration of future climate change risk into all aspects of site management.
Science Collections	<ul style="list-style-type: none"> 6.4.1. Curate Kew's collections to excellent standards, ensuring we are responsible stewards for these invaluable assets. 6.4.2. Continue to develop Kew's collections, ensuring they remain of contemporary relevance. 6.4.3. Open up access to the collections, ensuring they are widely used for active scientific purposes that benefit humankind. 6.4.4. Digitise the collections, making the data they hold freely accessible as Open Data, providing an invaluable resource for scientists and innovators.
Living Collections	<ul style="list-style-type: none"> 7.4.1. Develop and maintain diverse living plant collections in support of current and future scientific and horticultural research programmes. 7.4.2. Support plant conservation programmes through <i>ex-situ</i> propagation and cultivation of threatened taxa and by providing sources of genetic material for future conservation programmes. 7.4.3. Further enhance the important living heritage and contemporary aspects of the landscape at Kew. 7.4.4. Maintain habitat diversity and quality within <i>in-situ</i> conservation areas at Kew.
Buildings and structures of significance	<ul style="list-style-type: none"> 8.4.1. Conserve the significance of the Kew Gardens historic environment and architectural heritage. 8.4.2. Develop a long-term heritage strategy for Kew Gardens buildings and artefacts. 8.4.3. Provide an excellent facilities management services for the World Heritage Site. 8.4.4. Bring the Kew estate to a state of statutory compliance and B, 'good', condition where only routine maintenance is required. 8.4.5. Achieve excellence in asset and data management in order to improve our management of historic environment.

Priorities for 2020–2025	Key objectives
Landscape design and form	<p>9.4.1. Maintain and enhance the horticultural quality of the Kew site as an internationally renowned botanic garden and World Heritage Site.</p> <p>9.4.2. Ensure that the landscape is managed in a sustainable manner, securing the long term viability of the site.</p> <p>9.4.4. Protect and enhance the important heritage of the landscape at Kew including its underlying structure and form.</p> <p>9.4.5. Manage Kew's heritage tree collections, champion trees and key landmark trees for their health and long-term viability.</p>
Visitor engagement and experience	<p>10.4.1. Expand visitors' understanding of the diverse world of plants through the provision of engaging and authoritative interpretative information linked to the living plant collections, including compelling stories about Kew's global and local activities and impact.</p> <p>10.4.2. Embed Kew's core message and designation as a WHS at key points in the visitor experience.</p> <p>10.4.3. Increase RBG Kew's visitor and membership numbers in a sustainable manner through the delivery of innovative and engaging visitor programmes and events, which raise awareness of the work of RBG Kew and the WHS.</p> <p>10.4.4. Enhance the visitor experience by delivering high quality visitor facilities and services.</p> <p>10.4.5. Provide first class inspirational learning experiences for all.</p>
Scientific endeavour	<p>11.4.1. Document and conduct research into global plant and fungal diversity and its uses for humanity.</p> <p>11.4.2. Curate and provide data-rich evidence from Kew's unrivalled collections as a global asset for scientific research.</p> <p>11.4.3. Disseminate our scientific knowledge of plants and fungi, maximising its impact in science, education, conservation policy and management.</p> <p>11.4.4. Develop the facilities and resources needed to support Kew's role as a world class centre for scientific research and biodiversity conservation.</p>
Managing development within the WHS	<p>12.4.1. Buildings which contribute to the OUV of the WHS, or are of historic significance in their own right, will be maintained and used.</p> <p>12.4.2. Address all low-quality buildings that do not contribute to the OUV of the WHS through the development programme.</p> <p>12.4.3. New development will enhance and safeguard the character and appearance of the WHS including views into and out of the WHS and the setting of key buildings within the WHS.</p> <p>12.4.4. New development will seek to achieve high standards of sustainability and will use materials that reflect and respond to the character and appearance of the WHS.</p> <p>12.4.5. New development will be designed and specified in consultation with the relevant local, national and international decision-makers and stakeholders, as required.</p>
Managing development in the setting of the WHS	<p>13.4.1. Work with external partners to avoid further harm to the OUV of the WHS from unsympathetic development within the WHS buffer zone and wider setting. To be achieved through the Steering Group and by engaging in Local Planning Authority planning consultations.</p> <p>13.4.2. Promote awareness of the OUV of the WHS as a material consideration in planning decisions. To be achieved through working with external partners and ensuring links to the WHSMP are provided on Local Planning Authority planning webpages.</p> <p>13.4.3. Seek to reduce the scale of existing harm to the OUV of the WHS from unsympathetic buildings within the WHS buffer zone and wider setting when and where possible.</p> <p>13.4.4. Maintain the setting of the WHS through appropriate management of planting, and vistas within the WHS.</p>

4.3. Key principles for the management of the WHS

In summary, the Management Plan has five key principles for the management of the WHS. These are:

Protection, Conservation and Enhancement of the World Heritage Site

- The Outstanding Universal Value of the WHS should be sustained and enhanced through the conservation of its OUV, the site and the attributes that carry it. This should include the effective control of development in the buffer zone and the wider setting of the WHS which could impact on the OUV of the property.

Scientific Research

- Develop the facilities and resources needed to support Kew's role as a world-class centre for scientific research and biodiversity conservation.

Visitor Management and Experience

- Increase understanding of the WHS, sustainably managing it as a resource for public enjoyment, education and research.

Statutory and Policy Framework

- Ensure the Management Plan is endorsed by those bodies and individuals responsible for its implementation and its aims and policies incorporated into relevant planning guidance and policies.

Management, Liaison and Monitoring

- Continue to provide resources for the management, conservation and monitoring of the WHS.

4.4. Integration with the UN Sustainable Development Goals

The United Nations (UN) Sustainable Development Goals (SDGs) aim to improve both human prosperity and the health of the planet. The goals are set out in the report 'Transforming Our World: 2030 Agenda for Sustainable Development', which provides a framework for global development policy. The 17 SDGs are divided into 169 targets and have been adopted by 197 countries. As a world-renowned centre for botanical research, RBG Kew plays a crucial part in the UK's fulfilment of its commitments to the SDGs. With partnerships in 110 countries, RBG Kew embodies the UK's engagement in international action for healthier ecosystems and people.

The most relevant goals to RBG Kew are:

- No poverty – End poverty in all its forms everywhere.
- Zero hunger – End hunger, achieve food security, improve nutrition and promote sustainable agriculture.
- Life on land – Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss.

Eradicating poverty and hunger go hand in hand. Hunger is a manifestation of poverty, alongside social, economic and political elements such as limited access to basic services and social discrimination. Plants and fungi are the beginning of the food chain and represent the basis of many

economies. Goal 15, Life on land, underpins hunger and poverty eradication – the health of the planet, with its wealth of biodiversity, is crucial for the provision of resources. As a leader in botanical and mycological research, RBG Kew is at the forefront of the fight against hunger and poverty. In many parts of the world, agricultural practices are detrimental to biodiversity and so are detrimental to livelihoods in the long-term. RBG Kew researchers provide scientific expertise to determine how to make the best use of resources, alleviate poverty, and enhance nutrition and agrobiodiversity. RBG Kew is committed to fostering a world where the best possible use of resources is made for people to thrive sustainably.

In 2015, the General Assembly of States Parties to the World Heritage Convention adopted a Policy on the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention. The goal of this policy is to harness the potential of World Heritage to contribute to sustainable development and increase the effectiveness and relevance of the Convention, whilst respecting its primary purpose of protecting the OUV of World Heritage properties. Table 4 provides an overview of the three dimensions of sustainable development as set out in this policy and RBG Kew's integration of them into the management of the WHS.



Figure 3: SDG's relevant to RBG Kew's work

Table 4: Integration of a sustainable development perspective into the management of the RBG Kew World Heritage Site

Sustainable development dimensions	Integration in the RBG Kew WHS Management
Environmental sustainability	
<ul style="list-style-type: none"> • Protecting biological and cultural diversity and ecosystem services and benefits • Strengthening resilience to natural hazards and climate change 	<p>Objective 7.4.4 within this Plan commits to the protection and conservation of biodiversity within Kew Gardens. Selected habitats on site are regarded as being of high conservation value and will continue to be managed to conserve the integrity of the sites and the species assemblages present. RBG Kew recognises the value of the community and ecosystem services provided by the Thames landscape for the protection of key attributes of OUV and will continue to support and collaborate on projects with external partners to improve biodiversity, catchment management planning and flood risk management.</p> <p>An analysis of climate change risk forms a key consideration for the long-term management of the site and protection of its OUV. Objective 5.4.4 commits to the integration and consideration of future climate change risk and natural hazards into all aspects of site management.</p>
Inclusive social development	
<ul style="list-style-type: none"> • Contributing to inclusion and equity • Enhancing quality of life and wellbeing • Respecting, protecting and promoting human rights • Respecting, consulting and involving indigenous peoples and local communities • Achieving gender equality 	<p>RBG Kew is committed to upholding UK, European and international law in respect of human rights, cultural diversity, inclusion, equity and gender equality as well as enhancing quality of life and wellbeing for all its visitors, staff, students and volunteers. As a global scientific information resource RBG Kew draws its staff, its visitors and its stakeholders from widely diverse backgrounds, nationally and internationally.</p> <p>Objective 10.4.5 commits RBG Kew to providing learning experiences for all, targeting local communities through the Community Membership Scheme and seeking to diversify our demographic and attitudinal appeal. Objective 8.4.4 commits to ensuring statutory compliance is met for visitor and staff safety and wellbeing. Objective 12.4.5 commits to the consultation of all stakeholders, including local communities, in the design of significant development projects within the WHS to ensure the safeguarding of the site's OUV for all.</p>
Inclusive economic development	
<ul style="list-style-type: none"> • Ensuring growth, employment, income and livelihoods • Promoting economic investment and quality tourism • Strengthening capacity-building, innovation and local entrepreneurship 	<p>The objective of this Plan is to promote sustainable economic growth in the local area, which safeguards the setting and OUV of the WHS for current and future generations. Objectives 13.4.1 and 13.4.2 commit RBG Kew and its external partners to work together in achieving this goal.</p> <p>Objectives 9.4.2 and 10.4.3 of the Plan relate to responsible tourism and mechanisms for sustainable management of the WHS, for the benefit of the local community, and protection of the site's OUV. RBG Kew is committed to community engagement, education and capacity building. It is a key element of RBG Kew's primary statutory duty and purpose as a WHS. Objectives 6.4.3, 10.4.5 and 11.4.3 in particular outline RBG Kew's commitment to these objectives.</p>



The Herbarium

5. Risk and disaster management

5.1. Introduction

The UNESCO World Heritage Committee has asked for Management Plans to consider the risk of potential disasters and how these might be countered, placing great emphasis on the need for preparedness and forward planning.

Kew Gardens holds a wealth of valuable and irreplaceable assets, which form the foundation to our inscription as a WHS. As a national collection, it is important that they are both well protected and continue to be freely accessible for research and education. The Herbarium, Library, Art Archives and Scientific collections are particularly vulnerable to many events, ranging from natural disasters, floods, fire and pest degradation, to deliberate criminal acts such as burglary, arson or terrorist attack. The cost of restoring or replacing these scientifically important specimens is almost inconceivable and, in many cases, impossible.

Kew Gardens and its collections are visited and utilised by a wide range of users, both internal and external to the organisation. It is therefore imperative that we take an effective approach to risk management that becomes embedded within the organisation. This is an ongoing process, which will continue to be subject to review and revision over time.

This section addresses the key risks facing the site and the steps that have been taken to counter them. More work needs to be done to identify potential risks to the WHS as a whole, and work on this has started at time of writing. During the forthcoming monitoring period, a priority is to extend this work and to develop appropriate emergency and salvage plans for each building and for specific events.

5.2. Notable achievements since inscription

Emergency Procedures and Crisis Management Plan (2003) – After inscription in 2003, RBG Kew developed the EPCMP to address the issue of risk preparedness at the site. This has now been revised and updated into the Risk Strategy and Business Continuity Plan, providing a robust and focused decision-making framework for managing risk at Kew Gardens.

Plant pests and disease control programme (2006) – RBG Kew has been working closely with the Forestry Commission, West London local authorities and organisations in Europe to control the spread of oak processionary moth (OPM). RBG Kew currently undertakes an annual programme of OPM spraying to control its emergence in the gardens each spring, and this programme will continue while the need exists. The *Fraxinus* collection is also closely monitored for ash dieback and a policy for dealing with threat of infection was written during winter 2012.

Improved security (2018) – In line with recommendations from the government's National Counter Terrorism Security Office, RBG Kew invested in upgrading the access control and CCTV provision and installed a new security gate on site between 2016 to 2018. In 2019 RBG Kew published its revised and updated Security Governance Framework encompassing Physical Security, Personnel Security and Information Security in alignment with HM Government's Security Policy Framework.

5.3. Challenges and opportunities

5.3.1. Risk management and business continuity

RBG Kew has a risk strategy in place, which forms part of Kew's corporate governance and provides guidance for those involved with management and operations on site. Effective risk management is reliant on the commitment and cooperation of all those working on site and it will be a continuous process to embed the practice of risk management into the culture and daily behaviour of everyone in the organisation. It is essential that RBG Kew's risk arrangements are kept under constant review to remain relevant and up to date.

RBG Kew also has a business continuity policy in place, which sets out the basic principles for ensuring a consistent and effective response to an incident, guidelines for maintaining the most critical parts of the business and process for testing resilience arrangements. Further work is required in this monitoring period to update the safety manuals for individual buildings and develop salvage plans.

Historic Royal Palaces has major incident and business continuity plans in place for the buildings they manage within Kew Gardens. This period of emergency plan revision and testing provides a great opportunity for knowledge sharing and collaboration between RBG Kew and HRP, with a shared goal of providing the best preventative controls and emergency planning for the WHS.

5.3.2. Flood Risk

The WHS is located within the River Thames catchment area, adjacent to the tidal River Thames. Whilst the River Thames has some of the best flood defences in the world, with an integrated system of warnings, defences and local flood plans, climate change is set to put parts of the Gardens at increased risk from flooding.

The Thames Estuary 2100 Plan (Environment Agency, 2012), is the strategic flood risk management plan for London and the Thames estuary. The Richmond (southern) end of the site is not protected by flood defences currently and is at higher risk of periodic flooding as water levels rise. At present, flooding in this area can be managed by the Thames Barrier, but this will be unsustainable in the future as climate change increases the number of closures required to protect against rising tides. New ways of managing fluvial flooding other than by operating the Thames Barrier will therefore need to be put in place along this stretch of the river in the long term.

The areas in the WHS that fall within this zone of increased flooding risk (flood zone 3) (map Figure 3) and are not protected by local flood defences do not include listed buildings or areas where collections are in storage. Whilst it is anticipated that the Living Collections present in this part of the Gardens could tolerate temporary inundation, it should be a consideration for future planting in this area.

The north of the Gardens including the sites of the Herbarium, Banks Building and Jodrell are also within flood zone 3 but are protected by local flood defences. Ensuring

the continued integrity of these defences is critically important as the collections will continue to be stored in this part of the site in the future. There are flood detection units, but only in selected building basements. Further consideration of incident response to a severe flood event is urgently required. Documented flood plans including emergency response to a flood and proactive response to high-tide alerts are a priority for implementation in the coming year.

Increased interest in the value of the community and ecosystem services provided by the Thames landscape presents a great opportunity to renew focus on this aspect of the WHS in the forthcoming monitoring period. There is opportunity for RBG Kew to support and collaborate on projects to improve biodiversity, catchment management planning and flood risk management through its continued membership of the Thames Landscape Strategy initiative.

5.3.3. Fire risk

Recent events, such as the devastating fire at Brazil's National Museum and at Notre-Dame, have prompted even greater concern for the vulnerability of our collections and historic buildings to fire.

RBG Kew has taken steps to mitigate the risk of fire to the collections, and the more modern buildings, such as Wing E of the Herbarium, Library, Art and Archives (HLAA), have integrated fire suppression systems built in. However, risk to the collections remains high as a large proportion of the dried herbarium collections are stored in the Grade II* listed wings A, B and C of the HLAA, which do not provide the environmental controls and fire suppression systems required to best protect the collections.

The most effective risk avoidance mitigation will be a full refurbishment of the building, or the movement of the collections to other buildings easier to upgrade. However, the collections and the Herbarium are integral to Kew Gardens' WHS designation. Therefore, a careful balance needs to be drawn between ensuring authenticity of function, conservation of fabric and character of the historic building and meeting the requirements of the collections. All these concerns are being carefully considered and will be addressed as part of the Science Quarter Project. The immediate and short-term actions for mitigating fire risk to the collections are being addressed as part of the risk strategy and business continuity framework.

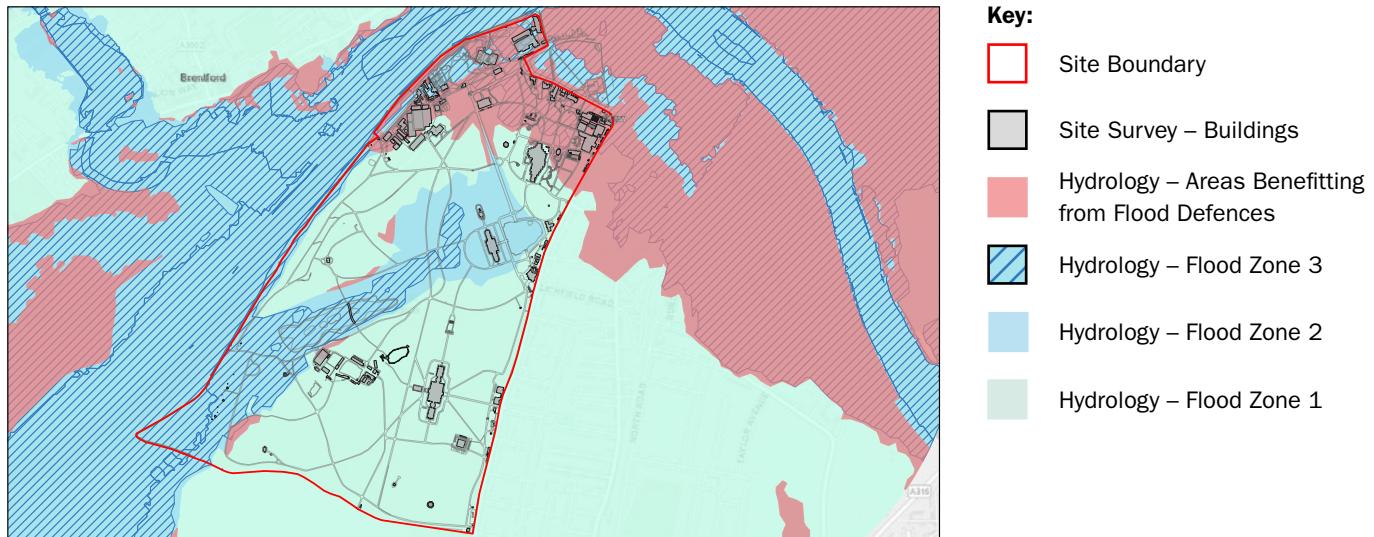
5.3.4. Climate change

UNESCO has expressed concern about the adverse impacts which climate change is having or may have on the OUV, integrity and authenticity of World Heritage properties. There is now an emphasis on the importance of integrating climate change issues into new and revised management plans, including risk preparedness, adaptive design and management planning.

An analysis of climate change risk has been integrated into the relevant sections of this Management Plan and forms a key consideration for the long-term management of the site. The key risks in the future are the increased potential for severe weather events leading to storm damage or prolonged droughts, increased flood risk, the introduction of new plant pathogens and changes to existing growing conditions in the Gardens. Controls and mitigation measures for the projected impact of climate change need to continue to be analysed and monitored.

As part of the next monitoring cycle there is potential to undertake a Climate Vulnerability Index assessment of the WHS, utilising the recently trialled CVI methodology developed at James Cook University. CVI is a rapid assessment tool developed to systematically assess climate change vulnerability of a World Heritage Site's OUV and its local community. Engagement on the third cycle of government Climate Change Adaptation Reporting would also enable Kew to bring focus to the site's key climate change threats and the adaptive measures that need to be embedded into Kew's existing and developing strategies.

Figure 3: Flood Map for the Kew and Brentford area



© RBG Kew (Georgina Darroch)

5.4. Objectives

The following key objectives have been identified:

- 5.4.1.** Identify and monitor potential threats to the site and ensure that appropriate emergency plans and strategies are drawn up and implemented to mitigate threats.
- 5.4.2.** Ensure that RBG Kew's risk arrangements are kept under constant review and that they remain relevant and up to date.
- 5.4.3.** Improve building compliance and precautions to mitigate against known risk of fire and flood to collections.
- 5.4.4.** Integrate a consideration of future climate change risk into all aspects of site management.

5.5. Key actions for 2020–2025

The following key actions are to be implemented:

- 5.5.1.** Ensure an emergency plan is in place for all identified risks to the collections (living and preserved), including (but not limited to) loss of heating, loss of irrigation water, extreme drought, flooding and pest outbreak and garden evacuation in the event of a terror attack.
- 5.5.2.** Complete safety manuals for all key buildings and develop salvage plans for their contents, aiming to have documentation in place ready for audit and testing in 2020.
- 5.5.3.** Ensure current fire and flood control measures work and that a robust maintenance and testing regime is in place.
- 5.5.4.** Design suitable long-term storage for the collections in the new Science Quarter Project.
- 5.5.5.** Ensure documented flood plans including emergency response to a flood and proactive response to high-tide alerts are in place for 2020.
- 5.5.6.** Engage with the Environment Agency on the long-term integrity of the flood defences protecting the Herbarium.
- 5.5.7.** Support the Thames Landscape Strategy in its initiative to protect and restore the community and ecosystem services provided by the Thames landscape.
- 5.5.8.** Investigate the potential to undertake a Climate Change Vulnerability Assessment for the site and contribute to the third cycle of government Climate Change Adaptation Reporting.



In Vitro Collection

6. Science Collections

6.1. Introduction

Kew's Science Collections include the Herbarium, Spirit Collection, Fungarium, Economic Botany Collection, Seed Collection, DNA and Tissue Bank, Microscope Slide Collection, In Vitro Collection, and linked digital resources. Alongside this, Kew holds historic botanical reference sources in Library, Art and Archives, including books, botanical illustrations, photographs, letters and manuscripts, periodicals, biographies and maps. The holdings extend back to the 14th century and include most of the important works relating to botany ever published. All these collections are used to support RBG Kew's science and horticulture but are also frequently consulted by visitors from across the globe to support their research in a diverse range of academic disciplines.

In 2018 RBG Kew published the first Science Collections Strategy, providing a guide to how the collections will be developed over the next ten years, setting out objectives to audit, enhance, manage and share the collections in line with RBG Kew's scientific priorities and with international policy. This work will allow comparison of the collections with that of scientific collections held globally and enable RBG Kew to work collaboratively to minimise unnecessary duplication of effort and to identify important gaps in both geographical regions and taxonomic groups. In addition, RBG Kew will embrace new technologies to enhance

collection curation and the latest storage techniques, ensuring that all specimens are managed to the highest international standards. RBG Kew will continue to research and develop mechanisms to ensure that the knowledge contained in Kew's collections is disseminated to a global audience. The Library, Art and Archives Strategy is under development but will closely align with what is set out in the Science Collections Strategy.

RBG Kew's collections lie at the heart of our strategic aim to be the global resource for plant and fungal knowledge and are a key attribute of OUV as a World Heritage Site. The care and protection of the collections is one of RBG Kew's primary statutory duties, ensuring they are kept '*as national reference collections, secure that they are available to persons for the purposes of study*' (National Heritage Act, 1983). To achieve this, the collections need to be well managed, widely accessible and secure, now and into the future. This section will highlight the challenges and opportunities identified in meeting those objectives. A full account of the framework within which RBG Kew will manage and develop the Science Collections over the next ten years can be found in the Science Collections Strategy.

6.2. Notable achievements since inscription

Shirley Sherwood Gallery for Botanical Art (2008) – The world's first public gallery dedicated to classic and contemporary botanical art, providing a space on the Kew Gardens site to exhibit RBG Kew's unique collection of botanical art. Since its opening the gallery has hosted 48 exhibitions with works by many important artists such as Margaret Mee, Rory McEwen and Rebecca Louise Law, as well as paintings from Japan, Brazil, Spain, South Africa, the US and Australia.

Herbarium, Library, Art and Archives extension, Wing E (2010) – The new wing provides climate-controlled vaults to safeguard existing and future collections of herbarium specimens, rare botanical books, illustrations and archives. Great care was taken with the design, to respond sensitively to existing buildings and protected trees along the River Thames, as well as provide excellent conditions for the invaluable collections held within. The building achieved a BREEAM 'excellent' rating and received a RIBA Award in 2011.

Science Collections Strategy (2018) – RBG Kew's first Science Collections Strategy provides a framework for the development and enhancement of the Science Collections over the next 10 years. This document provides critical focus and clarity to Kew's long-term management of this globally significant asset and key attribute of the World Heritage Site. www.kew.org/science/our-science/publications-and-reports/science-reports/kew-collections-strategy

6.3. Challenges and opportunities

Kew's Science Collections provide rich opportunities to develop RBG Kew's scientific and strategic objectives but face a number of challenges around curation, management and security, all of which are considered in the new Science Collections Strategy. These challenges and opportunities are briefly highlighted below; further detail can be found in the Science Collections Strategy and the forthcoming Library, Art and Archives Strategy.

6.3.1 What collections do we have?

To achieve RBG Kew's objectives to protect, share and further develop the collections, a comprehensive understanding of the age, quality, species representation and geographical scope of the collections is required.

Science Collections

A review undertaken as part of the Science Collections Strategy showed that the finer details of the collections and their specimens were still poorly known. Well-documented collections are required to act as a reference and to provide comparative material for RBG Kew's research and conservation work. They will also enable RBG Kew to compare global coverage with different institutes, so that collections and collection hotspots complement rather than compete. Digitising the largest collections, the Herbarium and Fungarium, will facilitate auditing and accessing the collections to promote their use.

Library, Art and Archives

Similarly, Kew's Archives and Art collections are not yet fully catalogued or accessible online. The Art and Archives form a hugely valuable resource on the history, discovery, study, transfer and use of the world's plants and fungi, and hold a wealth of yet undiscovered information on RBG Kew's global impact as a botanic garden through history. Cataloguing and indexing these collections is crucial to maximise their value and potential and to unlock their links with Kew's other collections.

Digital access systems

RBG Kew currently maintains a number of disparate digital resources, so the key challenge is to integrate them, facilitating cross-collection referencing and more efficient curation and management. Integration will provide efficiencies in cataloguing the collections, ensure easier tracking of movements between collections, and support increased digital access to collection data.

6.3.1. How do we protect and manage our collections?

As a key attribute of the World Heritage Site and the foundation for our research, Kew's collections need to be well protected and secure. These valuable and fragile resources require careful management to fulfil their full potential and there remains significant opportunity for improvements to their curation, storage and accessibility.

Curation

To ensure best practice and provide a benchmark to help assess curation and management quality, RBG Kew aims to adopt the Museum Accreditation Scheme standards for the collections, where appropriate. There are opportunities to strengthen international partnerships such as the Biodiversity Heritage Library (BHL) by increasing RBG Kew's contribution to it and by participating in the development of the European Distributed System of Scientific Collections, enabling RBG Kew to play an active role in developing common standards and protocols. RBG Kew will aim to assess the preservation needs of the Library, Art and Archives collections to develop a fully costed action plan to address the preservation backlog facing these collections.

New acquisitions

RBG Kew is committed to acquiring new and relevant material for its collections, ensuring they are widely used for active scientific purposes that benefit humanity. To ensure the acquisition of new collections is undertaken in a controlled manner, the targeted development of the collections must be guided chiefly by RBG Kew's scientific priorities, which can be found in the Science Strategy 2015–2020.

Infrastructure

The current infrastructure housing the collections is variable between and across collections in terms of physical quality, access for research and risks from hazards including fire, pests and flooding. A significant challenge for RBG Kew is the extensive work required to modernise the facilities in our collections buildings, whilst retaining and protecting

their historical and architectural significance. As plans to address these immediate issues are implemented, longer term needs, such as increased space and improved technological capabilities of the physical infrastructure will also need to be considered.

6.3.2. How do we increase access to our collections?

Kew's collections provide a significant resource for the global research community and society. It is therefore imperative to support and facilitate the research and information needs of others by increasing access to, and engagement with, Kew's physical collections and their digital counterparts. The global demand for increased digital access to our collections necessitates improvements to Kew's technical infrastructure to enable better integration and dissemination. This will be a key consideration when developing plans for the new Science Quarter.

Digitisation

Capturing data and imaging the collections is important for the dissemination of information but also safeguards this unique asset against the risk of complete loss from physical disaster. Currently, only 8% of Kew's herbarium specimens have been imaged, including all type specimens (c. 330,000 specimens) and still fewer Art and Archives collections have been digitised, although partnerships such as BHL have generated a significant body of digitised published content. Recent advances in industrial-scale imaging and processing now make the digitisation process significantly quicker, facilitating more efficient data capture from images of specimens and their labels. To support the increased use of RBG Kew's core science data by researchers, data will be assigned an open licence and RBG Kew plans to support external annotation of collection data by researchers.

6.4. Objectives

The following key aims and objectives have been identified:

- 6.4.1.** Curate Kew's collections to excellent standards, ensuring we are responsible stewards for these invaluable assets.
- 6.4.2.** Continue to develop Kew's collections, ensuring they remain of contemporary relevance.
- 6.4.3.** Open up access to the collections, ensuring they are widely used for active scientific purposes that benefit humankind.
- 6.4.4.** Digitise the collections, making the data they hold freely accessible as Open Data, providing an invaluable resource for scientists and innovators.

6.5. Key actions for 2020–2025

The following key actions are to be implemented:

- 6.5.1.** Support the design and development a new Science Quarter with world-class physical and digital infrastructure for all the Science Collections.
- 6.5.2.** Adopt the UK Museum Accreditation Scheme standards for the Herbarium, Fungarium, Economic Botany and Art collections, by 2020–2021.
- 6.5.3.** Publish the Library, Art and Archives 10-year strategy by mid-2020.
- 6.5.4.** Develop a fully costed action plan to address the Library, Art and Archives collections preservation backlog.
- 6.5.5.** Complete an audit of the Science Collections – to include an understanding of their age, quality of specimens and geographical scope. Generic level audit across collections during 2020–2022, species level by 2028 following digitisation of the Herbarium and Fungarium.
- 6.5.6.** Implement an Integrated Collections Management System (ICMS) to access collection information digitally by 2020–2021.
- 6.5.7.** Continue the systematic cataloguing of the Archives and using the Integrated Collections Management System (ICMS), begin to address the Art collection cataloguing backlogs.
- 6.5.8.** Continue the digitisation of Kew's Science Collections, targeting to digitise all collections by 2028.



7. Living collections

7.1. Introduction

The majority of the Living Collections grown outdoors at Kew Gardens are in the temperate Arboretum, with trees planted in family groups that are broadly consistent with Bentham and Hooker's 19th-century classification of plant families. There is strong representation of taxa from the temperate northern hemisphere, particularly eastern Asia, north America and temperate regions of the southern hemisphere, such as South America, Australasia and southern Africa. The collections and natural woodland create a living landscape containing around 14,000 individual temperate zone trees. The glasshouse and conservatory collections further add to the diversity of temperate collections (those not able to withstand local winter cold) and also include extensive tropical collections, bulbs and alpines, arid and succulent taxa, aquatic plants, and orchids from around the globe. Plants from tropical, temperate, arid and alpine environments are displayed in our iconic conservatories including the Palm House, Temperate House, Waterlily House, Princess of Wales Conservatory, and Davies Alpine House. In addition, many species are grown and curated in the 'back-of-house' nurseries including the Tropical Nursery, Arboretum Nursery, Jodrell Glass and Melon Yard (encompassing the Alpine Nursery).

Throughout Kew Gardens' history, the collections have reflected the changing interests of its directors, its scientists, horticulturists and the government, and no unifying set of priorities has guided its growth and development. In 2019 RBG Kew published its first Living Collections Strategy, to provide a framework for how Kew will continue to manage and develop these unique collections over the coming decade. The strategy provides clarity and focus to RBG Kew's management of the existing collections and the establishment of new ones. A full account of Kew's Living Collections and the framework within which RBG Kew will manage and develop them over the next ten years can be found in the Living Collections Strategy.

7.2. Notable achievements since inscription

Davies Alpine House (2006) – The Davies Alpine House is a RIBA award-winning structure that provides optimum growing conditions to display Kew Gardens' alpine collection. This was the first new glasshouse to be constructed at Kew for more than 20 years. It holds a permanent display of larger alpine specimens, alongside potted show-plants brought from Kew's behind the scenes Alpine Nursery as they come into flower.

Licensed Plant Reception and Quarantine Unit (2011) – Plant quarantine at Kew Gardens is concerned with controlling plant pests and diseases and is hugely important for the protection of our living collections and the wider environment. This state-of-the-art new facility is the first stop for all new plant material sent to Kew Gardens, making sure that it is compliant with the necessary legislation, fully inspected, and if necessary isolated to prevent introduction of plant pathogens to the gardens.

Arboretum Nursery (2018) – This new facility is a purpose-built glasshouse with six temperature regulated zones and the latest environmental controls for propagating and growing temperate trees and shrubs for the Arboretum collections and gardens.

Living Collections Strategy (2019) – RBG Kew's first Living Collections Strategy provides direction for the management and future development of the collections at Kew Gardens. The strategy outlines the themes and criteria that will be used for defining, assessing and developing the Living Collections and closely aligns with RBG Kew's Science Strategy and Science Collections Strategy.

www.kew.org/kew-gardens/plants/living-collection

7.3. Challenges and opportunities

Kew's Living Collections face a number of challenges around curation, management and security, all of which are considered in the new Living Collections Strategy. The Living Collections also provide rich opportunities for further development and enhancement for the furthering of RBG Kew's scientific and strategic objectives.

These challenges and opportunities are briefly highlighted below; further detail can be found in the Living Collections Strategy 2019.

7.3.1. What Living Collections do we have?

Kew's Living Collections have grown over 170 years, guided by the interests of its directors, its scientists, horticulturists and the government. This has resulted in a hugely diverse collection, more comprehensive in some areas than others. A key objective moving forward is to introduce a more defined process for collection acquisition and management, aligned with RBG Kew's Science Strategy and Living Collections Strategy. To achieve this, we first need a good understanding of what's in the collections, and whether it's supported by accurate and up-to-date baseline data.

Living Collections Database

Data on Kew's Living Collections was reviewed as part of the development of the Living Collections Strategy. 87% of accessions were found to be identified to species level, but records of their origins and associated data was found to be variable in quality. The current database has restrictive search capabilities, no effective mapping application and is not compatible with other major database systems. It is essential that an accurate, up-to-date and robust database is developed to allow the connections between the Living Collections and Science Collections to be fully realised. The establishment of an improved Living Collections Database is critical to RBG Kew. Alongside the new database, a complete audit of the Living Collections would need to be undertaken.

Curation

High quality curation is critically important; this includes the systematic verification of all collections and up-to-date labelling. To ensure that the woody collections in the Arboretum are correctly identified, a new Horticultural Taxonomist post was created in 2016.

7.3.2. How do we protect and manage our Living Collections?

The health, completeness and growth of the Living Collections is of vital importance to the conservation of the World Heritage Site. These collections require expert care and skill to ensure their preservation for the future and Kew is committed to maintaining best practice in their management.

Collection Management Plans

A Collection Management Plan will be prepared for each collection and maintained by the curator of the collection. Each plan will include an outline of the collection objectives and an overview of the horticultural procedures required to ensure the health and vigour of material in the collection.

Growing conditions

Plants at Kew Gardens are sited to achieve optimum environmental conditions for growth, either in the controlled climate conditions within Kew Gardens' nurseries or conservatories, or outdoors where siting is based on the suitability of available microclimate and soil conditions. Climate change presents a challenge to this process and future climate projections will need to be taken into account in some instances. Decisions around planting of long-lived taxa within the landscape therefore needs to include consideration of the suitability of each taxon for the likely future growing conditions.

Biosecurity

Maintaining biosecurity is key to the continued preservation of the Living Collections. Plant health at Kew Gardens is the responsibility of a dedicated team who operate the licensed Plant Reception and Quarantine Unit.

Protecting the collections against potentially devastating pest or disease outbreaks will continue to be a challenge for RBG Kew. Biosecurity risk is managed through our biosecurity policy and related protocols to manage the import, movement, use and sharing of biological materials.

Tree management

Kew Gardens' tree planting and establishment practices, and general arboricultural care of mature trees, are recognised widely as demonstrating 'best practice' and have been adopted by other gardens and arboreta within the UK and worldwide. The new Living Collections Database offers an opportunity to further improve this system by linking the tree maintenance records to each Living Collection and utilising a mapping function to track works, tree health and new plantings for improved planning and analysis going forward.

RBG Kew also has a Tree Risk Assessment Management System (TRAMS) to monitor and manage the extensive tree collections. Every individual planted tree in the Arboretum and Gardens is given a unique accession number and recorded on the TRAMS database. All trees have risk assessments carried out on them by our own trained and qualified arborists and records of inspections and mitigation works are recorded in the TRAMS database.

Facilities

The condition and quality of Kew Gardens' growing facilities and display houses is quite varied across the site, and in constant need of proactive and reactive maintenance. The recent restoration of the Grade I listed Temperate House has been a success and the restoration of the Grade I listed Palm House will also be required in the coming years. Failures in the heating, irrigation and ventilation systems have historically occurred, and pose a risk to the Living Collections housed in the display houses and back-of-house nurseries. As part of RBG Kew's new maintenance strategy, the facilities will be subject to an improved level of inspection and planned maintenance. Further information on Kew Gardens' future management of maintenance requirements can be found in Section 8 of the World Heritage Site Management Plan.

7.3.3. How do we enhance the value of our Living Collections to support Kew's mission?

As an active botanic garden and research institution, continuing to add to the diversity of the Living Collections is a priority for RBG Kew and important to its OUV. Decisions on introducing new collections need to be undertaken in considered manner, guided by priorities identified in the Living Collections Strategy.

New acquisitions

New collections will be acquired to add to the geographical, taxonomic or genetic diversity of the current collections and maintain a staggered age profile. RBG Kew's extensive scientific research programme, guided by the Science Strategy and the Science Collections Strategy, provides an opportunity to develop more tangible links between the Living Collections and the Science Collections with a key aim to provide a more complete set of reference plants to underpin research and other priorities.

Landscape

In addition to their scientific or conservation value, the living collections play a key aesthetic component in Kew Gardens' historic landscape. The Arboretum collections form the backbone of the historic landscape, providing the essential structure and experience, as well as maintaining key vistas and views. It is therefore also important that judicious selection and careful design of the displays of living collections is undertaken to further enhance the significance of this landscape. Landscape development at Kew Gardens aims to connect its historical, scientific and conservation themes, to bring the landscape to life and reflect the many facets that contribute to the OUV of the WHS. Further detail on RBG Kew's management of the historic landscape to preserve and enhance significance is found in Section 9 of this document.

Biodiversity

The first botanical survey of Kew Gardens was done in 1875 and the site continues to have an active recording programme. Selected habitats within Kew Gardens, such as the two sites of acid meadow and the Natural Areas, are regarded as being of high conservation value for the Greater London Area, and will continue to be managed to conserve the integrity of the sites and the species assemblages present. A Phase 1 Habitat Survey was undertaken as part of the 2003 Site Conservation Plan, which can be referred to for a summary of Kew Gardens' main habitats.

Succession and removal policy

Where an individual plant is known to be coming to the end of its healthy life, a decision will be made in relation to the propagation or replacement of that taxon. The aim is to retain the diversity, longevity and resilience of the Living Collections. In the case of trees dying within the landscape a similar process will be undertaken and, where possible, a young accession of the same species will be planted. In some situations, the tree may be of historical, or cultural, or landscape design significance, in which case it may be kept *in-situ* while young stock is planted and also grown on site.

7.4. Objectives

The following key aims and objectives have been identified:

- 7.4.1.** Develop and maintain diverse living plant collections in support of current and future scientific and horticultural research programmes.
- 7.4.2.** Support plant conservation programmes through *ex-situ* propagation and cultivation of threatened taxa and by providing sources of genetic material for future conservation programmes.
- 7.4.3.** Further enhance the important living heritage and contemporary aspects of the landscape at Kew Gardens.
- 7.4.4.** Maintain habitat diversity and quality within *in-situ* conservation areas at Kew Gardens.

7.5. Key actions for 2020–2025

The following key actions are to be implemented:

- 7.5.1.** Maintain the highest level of horticultural care and curation of the Living Collections and their associated data, completing an audit of the Living Collections by 2022.
- 7.5.2.** Develop individual plans to guide the development of each living plant collection by 2023.
- 7.5.3.** Ensure the collections are protected from disease and contamination by maintaining strict biosecurity procedures and compliance with all applicable national and international laws and conventions on plant collection and movement.
- 7.5.4.** Ensure existing growing facilities are well maintained and build new facilities to meet the future requirements of the collections.
- 7.5.5.** Develop an improved record management system, with potential for integration with RBG Kew's scientific collection database by 2021.
- 7.5.6.** Develop the collections in line with the Living Collections Strategy criteria, targeting data-rich accessions from wild sources, increasing the percentage of IUCN Red-Listed taxa and accessions that align with Kew's Science Collections Strategy.
- 7.5.7.** Develop and enhance collections for identified priority landscapes at Kew and ensure continued preservation of heritage specimens.
- 7.5.8.** Develop a publicly accessible mapping function for Kew's trees and plant collections, with attached collection data, including information on specimens of historic significance, by 2022.
- 7.5.9.** Continue to conserve the integrity of the Natural Area and acid grasslands, protecting the species assemblages present and encouraging native species diversity.



Temperate House

8. Buildings and structures of significance

8.1. Introduction

The Royal Botanic Gardens, Kew WHS contains a rich and varied architectural heritage ranging from large Victorian glasshouses, to Georgian houses, alongside some more contemporary glasshouses and structures. In addition, several follies, statues and artefacts of historic interest are located around the Gardens. Fifty-six of these structures and objects are designated as listed on the National Heritage List for England (NHLE). These all require long-term conservation as an integral expression of the WHS's history and setting. Forty-six of the listed buildings and objects fall within the RBG Kew administrative boundary, with four of these (Kew Palace, the Royal Kitchens, Queen Charlotte's Cottage and the Pagoda) managed by HRP. There are a further ten residential or commercial properties and several objects on Kew Green under other ownership which fall within the WHS boundary.

Many of our more important historic buildings are still in use and utilised for their original function. For example the Palm House and the Temperate House still function as public glasshouses and the Herbarium still house preserved botanical specimens. Other buildings, such as Museum no 1, 2 and 4, were converted to other uses over time, these now operate respectively as restaurant, School of Horticulture and offices/wedding venue. More recently several modern structures have been built such as the Alpine House, the Hive and the Treetop walkway. These contribute to the Gardens long history of commissioning contemporary new buildings and attractions and have been carefully designed to respond sensitively to their landscape setting and surrounding architectural heritage.

Kew Gardens iconic architecture and historic heritage is a key attribute of its inscription as a World Heritage Site. As custodians of the WHS on behalf of the UK government, it is RBG Kew's responsibility to ensure there is sufficient

investment in protection and maintenance of these buildings, to conserve them for future generations. We recognise the importance in protecting the significance of our historic buildings whilst also acknowledging the need for Kew to evolve as an organisation and visitor attraction with associated changing operational and staff requirements.

8.2. Notable achievements since inscription

Kew Palace restoration (2006) – Re-opened in 2006 after an extensive 10-year restoration by HRP, Kew Palace is open to the public and now shows the building as it would have been in 1804-05 – a domestic royal residence for George III and Queen Charlotte. Three floors are accessible, including, the bedrooms of Princesses Augusta and Amelia.

Marianne North Gallery restoration (2009) – Re-opened after a comprehensive restoration of the gallery and its unique collection of 19th-century botanical paintings. With more than 800 remarkable paintings covering the walls of the gallery, this collection of art constitutes an important piece of Kew Gardens heritage.

Temperate House restoration (2018) – Following a major five-year restoration building process, the Temperate House has been fully refurbished, guaranteeing a 25-year lifespan on all elements. This work enabled Historic England to remove it from the 'Buildings at Risk' register.

Great Pagoda restoration (2018) – A major restoration has been completed by HRP on this striking folly designed by William Chambers and completed in 1762 as a gift for Princess Augusta. As part of the restoration HRP recreated the 80 carved ornamental dragons and restored them to the building for the first time since 1784.

8.3. Challenges and opportunities

8.3.1. Building conservation

There are many important historic buildings on the Kew Gardens site currently in need of repair and improvement. Some, such as the Grade I listed Palm House, require a substantial restoration programme to be undertaken including corrosion removal, repainting and replacement of the mechanical and electrical systems. Others, including those historic and listed buildings in current use as office space, require substantial improvement to meet 21st century office standards, operational and staff requirements.

Alongside the historic buildings, Kew Gardens has many statues, follies, gates and garden structures of significance to the Gardens, some of them listed. Some, such as the Temple of Bellona have been the subject further historic research and interest, but are currently closed to the public and require more urgent care. These structures have all been periodically conserved by specialists in the care of the statuary and artefacts but require monitoring and conservation as part of a more planned long-term approach to caring for our assets.

To facilitate a site wide consideration of building conservation and future development plans, a new mapping tool is in development to give better visibility and analysis of future building uses and the impact of change across the site. A key objective will be to protect and re-use all historically significant buildings, ensuring their long-term conservation and suitability of use.

8.3.2. Heritage Strategy

In order to manage future change and promote greater awareness of Kew Gardens unique historic environment, it is proposed that a Heritage Strategy is developed for the site, linked to the future Development Plan. Building on the information provided in the Site Conservation Plan (2003), the strategy will provide a framework for the conservation and management of Kew's built and landscape heritage.

The objective of such a strategy will be to manage change to Kew Gardens in ways that will best sustain its heritage values, while recognising opportunities to further reveal or reinforce those values for present and future generations. A strategy will ensure that Kew's approach to heritage is informed, strategic and sustainable.

There is an opportunity to utilise a planned approach to conservation with a Listed Building Heritage Partnership Agreement (LBHPA) in partnership with Historic England and the Local Planning Authority. Such an agreement would enable RBG Kew to progress standard repair works to its Listed Buildings and structures following a mutually agreed approach, without the need for individual listed building consent applications.

8.3.3. Maintenance and compliance

Due to limited funding the RBG Kew Estate has survived in a repeated cycle of reactive minimal maintenance for many years. The cumulative effect has been a deterioration of our assets. At the same time, Kew Gardens is receiving

more visitors than ever before with the wear and tear on our buildings and assets increasing.

A new condition survey was undertaken early in 2019. As a result, we now have a comprehensive overview of the condition of our assets and buildings in the Kew. 57% of our assets are in an 'A, excellent' or 'B, good' condition. Equally evident is that 43% of assets are in a 'C, poor' or 'D, deficient' or failing condition.

We have key priorities for immediate resolution of critical issues including water, fire, gas and electricity safety inspections as well as working towards meeting accessibility, public health and wellbeing best practice. It is of the highest priority for RBG Kew to continue to address all compliance and critical issues to enable these buildings to remain in use and fit for purpose.

RBG Kew's previous facilities maintenance contract expired in 2019, presenting the opportunity to review the service provision. Following an options appraisal, the facilities maintenance was brought in-house to be delivered directly by Kew Estates to improve management of contracts and the service provision in terms of efficiency, effectiveness and 'value for money' for our organisation.

8.3.4. Environmental sustainability

RBG Kew is committed to achieving best practice in sustainability. As an implication of this we endeavour to meet the highest environmental standards in new buildings which are all built to a BREEAM Excellent standard.

For our heritage buildings the aim is to ensure the buildings perform passively as environmentally efficient as possible in order to achieve a reduction in the resources required to run the buildings. Examples can be a reduction in gas usage from installing new window seals or replacing light fittings and bulbs with LED leading to a reduction in electricity usage.

8.3.5. Funding

In 1983, 90% of RBG Kew's funding came from the UK government as grant in aid, by 2019, this has fallen to 39%. A consequence of the reduction in funding has been a fall in both capital and planned maintenance investment in the estate.

Whilst RBG Kew is now systematically addressing any critical works as part of its Capital Development Programme, there is backlog of work which requires funding to bring the estate up to a 'good' condition, where only planned maintenance is required.

A future funding commitment from Defra is imperative to safeguard the internationally significant values embodied in the Kew Gardens' estate and the collections.



Great Pagoda

8.4. Objectives

The following key objectives have been identified:

- 8.4.1.** Conserve the significance of the Kew Gardens historic environment and architectural heritage.
- 8.4.2.** Develop a long-term heritage strategy for Kew Gardens buildings and artefacts.
- 8.4.3.** Provide an excellent facilities management services for the World Heritage Site.
- 8.4.4.** Bring the Kew Estate to a state of statutory compliance and B, 'good', condition where only routine maintenance is required.
- 8.4.5.** Achieve excellence in asset and data management in order to improve our management of historic environment.

8.5. Key actions for 2020–2025

The following key actions are to be implemented:

- 8.5.1.** Progress the Palm House restoration proposal to a point of readiness for fundraising by 2021.
- 8.5.2.** Undertake a Condition survey of all historic artefacts and follies in 2020.
- 8.5.3.** Develop and implement a Heritage Strategy for the site by 2022.
- 8.5.4.** Investigate the opportunity for establishing a Heritage Partnership Agreement with Historic England and the Local Planning Authority in 2022.
- 8.5.5.** Launch in-house facilities management services and a planned preventative maintenance system by 2020.
- 8.5.6.** Develop and implement a prioritised 10-year forward maintenance programme for Kew Gardens (2020–2030).
- 8.5.7.** Achieve state of statutory compliance by 2021.
- 8.5.8.** Review existing building stock and workspace to inform a 10-year development plan and workspace strategy in 2021.



Mediterranean Garden

9. Landscape design and management

9.1. Introduction

Kew Gardens was proposed for inscription as a World Heritage Site in 2003 as ‘a cultural landscape designed and created intentionally for scientific and aesthetic purposes.’ This places its landscape at the heart of its OUV and the framework through which we can understand the site’s heritage. The landscape at Kew Gardens does not reflect the work of a single designer or director. Instead, it is an extremely rich and layered historic landscape reflecting the different phases of the site’s history and influences shaping its direction. The landscape we see today is a testament to the site’s unique and long history as both a designed landscape and botanical garden.

Sustaining the significance of Kew Gardens landscape requires a careful balance of maintaining the framework of the historic landscape, preserving the differing landscape characters across the site, whilst continuing in the tradition of introducing contemporary garden interventions and

living collections. The Gardens have benefited from two Masterplans (by Wilkinson Eyre in 2002, and Gross Max in 2010), each providing an analysis of the structure of the landscape, its buildings and opportunities for enhancement. Both of these documents have contributed to the long-term management strategy for the landscape and are consulted as part of the horticultural planning process within RBG Kew. Not all of the proposals in these plans have been taken forward and some remain aspirational, whilst others have been superseded. Whilst the Landscape Master Plan provides a long-term vision for the spatial structure of the Gardens, a departmental plan has been put in place to set out the aims, priorities and deliverables for Kew’s Horticulture department over a three-year period. This framework provides structure to the site development, whilst allowing parts of the Gardens flexibility to adapt to changing demands and circumstances over time.

9.2. Notable achievements since inscription

Landscape Masterplan (2002 and 2010) – The 2002 Site Development Plan by Wilkinson Eyre, was developed alongside RBG Kew's first World Heritage Site Management Plan and the Site Conservation Plan, both key documents to enabling a fuller understanding of the site's significance and heritage and importantly, how to conserve it. The 2010 Landscape Masterplan by Gross Max sought to further build upon previous studies and proposed a range of aspirational development projects alongside landscape management recommendations to improve the structure and legibility of the historic landscape. Since these Masterplans, significant works have been undertaken to re-establish the historic vistas, open up selected views and plant up the boundary edges. Projects taken forward in the period since the Masterplan include the expansion of the Nesfield designed Rose Garden, the installation of the Sackler Crossing and the redesign of the plant family Order Beds into the Agius Evolution Garden.

Great Broad Walk Borders (2016) – Originally landscaped in the 1840s by William Nesfield, the Great Broad Walk Borders are a contemporary reinterpretation of Nesfield's original border designs. These breath-taking borders sweep along 320 metres of Kew Gardens' famous Broad Walk, reminding visitors of the value of global plant conservation and of RBG Kew's work as the global resource for plant knowledge.

Garden Design team (2014) – As part of the 2014 departmental restructure, RBG Kew set up a new Garden Design team and employed two full time landscape designers to the Horticulture Department, responsible for the design and development of new horticultural features at Kew and the enhancement of the existing landscape. Recent projects have included the Great Broad Walk Borders, the Children's Garden, and the recently opened Agius Evolution Garden.

Agius Evolution Garden (2019) – Science and horticulture come together in perfect harmony in the newly designed Agius Evolution Garden. Advances in technology have allowed our scientists to contribute to building the Plant Tree of Life, piecing together the astounding relationships found in the plant kingdom. Stunning horticultural displays tell these compelling stories of plant evolution in a relaxing, contemplative space.

9.3. Challenges and opportunities

9.3.1. How do we manage our landscape?

The Gardens today continue to be an actively managed landscape, growing and evolving through the work of our horticulturists, scientists and directors. Having developed over many years, the Gardens are a palimpsest of the various cultural, scientific and aesthetic influences on the landscape. Whilst the historic structure and character of the Gardens is of vital significance, it is recognised that as a living collection the Gardens also serves other equally important roles. The challenge is therefore to maintain a unified, coherent landscape that houses our important collections, protects its historic significance and supplies a rich experience for visitors. Coordination of these priorities is supported by

Garden Design team, who undertake extensive research in the development of new features, ensuring any changes or new additions are done in a manner sensitive to the historic fabric and setting of the Gardens.

Horticulture

Preserving the historic character and legibility of the landscape into the future is an important objective for the horticultural management of the landscape. There are broadly three management regimes used across the Gardens currently, which make a distinction between the northern end of the site, the Arboretum and the conservation area to the south. The north-east of the site is characterised by its high-maintenance amenity displays and thematic gardens. The Arboretum, which is predominantly organised into taxonomic groupings of trees and shrubs, can be characterised as less formal, with areas of large-scale bulb plantings in the sward and mainly species collections. The conservation area at the south-west of the site can be characterised as a semi-natural woodland with predominantly native trees and acid grassland.

Preserving the character of these management zones helps retain the legibility of the designed landscape into the future. Maintaining the Gardens as these three broad management zones helps articulate the Gardens' historic development and the introduction of new landscape features needs to continue in the spirit of these character zones.

Arboriculture

With over 14,000 trees on the Kew Gardens site, the management of this significant collection presents several challenges. Of primary importance is ensuring the safety of the visiting public and falling tree limbs can pose a serious threat if not appropriately managed. This is a concern RBG Kew takes very seriously and we have invested considerable time into the development of sector-leading arboricultural care practices. Trees are systematically inspected and monitored by RBG Kew's trained and qualified arborists using the Tree Risk Assessment Management System (TRAMS), and work continues to develop and improve this system into the future.

New tree plantings in the Gardens are strategically planned with the long-term development of the landscape and future threats in mind. Alongside species of scientific or conservation value, the strategic planting of 'big' shade trees, long-living trees and 'hard working' trees to provide a variety of seasonal interest is also important. Species of known risk for specific pests, diseases or health and safety issues are purposely avoided as new plantings as much as possible. The challenge going forward will be predicting best species selection according to changing climate projections and the spread of new plant pests and diseases.

Planning and documentation

RBG Kew's two Landscape Masterplans continue to contribute to the long-term management strategy for the landscape and are consulted as part of the horticultural planning process within RBG Kew. Alongside this a departmental plan sets out the aims, priorities and deliverables for teams over a three-year period.

Whilst this ensures clarity and direction to the management of Kew Gardens' landscape, there remains opportunity to

provide further guidance detailing the works undertaken on an annual basis and principles for decision making. When managing a landscape over such a long timescale, it is of vital importance that a documentary record is retained and that the invaluable knowledge of RBG Kew's staff is passed on for the future. The introduction of formalised management documentation for the landscape will help ensure horticultural standards continue to be upheld over time. The new Living Collections Database will offer an opportunity to utilise mapping and records functions to facilitate this.

9.3.2. How to we preserve and enhance our landscape heritage?

The Gardens are located in a unique position along the River Thames that forms part of a wider natural and designed landscape representing an 'Arcadian' vision. The landscape character of this area is based upon the combination of natural landscape, rural pastures and flood meadows with formally designed landscapes of avenues and vistas. Kew Gardens' relationship to the wider landscape is a key aspect of its significance as a World Heritage Site and these external links need to be retained and enhanced where possible. The history of the Gardens is surprisingly under-studied, and there is excellent potential for research projects that use modern methods, framed within current academic research in this field. Garden history is also a natural area of collaboration between RBG Kew and HRP bridging the full 300-year history and contemporary shared care of the site.

Views, vistas and setting

The long-term safeguarding of Kew Gardens' historic spatial structure demands a careful, strategic process of ongoing re-planting and landscape management. Existing open space and corridor vistas need to be protected from further encroachment and the tree canopy managed to retain views and sightlines. Strategies such as crown pruning to avoid view closure and the planting of new avenue trees in pairs have been underway for a number of years on site.

Further strategic strengthening of boundary plantings and screening within the Gardens will also be required in the long term, to help offset the threat of ever taller external building developments becoming visible within the landscape. The use of trees as screening, however, cannot be relied upon in the long term to protect against inappropriate external development, which if not managed sensitively, will continue to erode the setting of the site and our ability to experience the Gardens' 'Arcadian' vision. The views into and the setting around the Gardens will be enhanced wherever possible.

Kew's riverside car park currently creates a negative visual impression, and future projects to upgrade Brentford Gate and the adjacent car park will take the opportunity to improve this.

Archaeology

Not all of Kew Gardens' fascinating heritage remains visible today, but these hidden features are no less significant. The Gardens contain archaeological deposits from a range of periods, dating back as early as the Palaeolithic. The presence of many demolished, removed or relocated structures have been identified in documentary sources and on early maps of the site. As a result, Kew Gardens has been identified as

an Archaeological Priority Area (APA) in the London Borough of Richmond's Local Plan. Richmond's APAs are currently being reviewed and a new tier level (levels 1–3) will be introduced.

Activities undertaken as part of the general management of the Gardens, such as horticultural maintenance, services installation or ground works for temporary events, all have the potential to impact on these archaeological deposits, compromising their integrity. To assist in the management of this resource, the Site Conservation Plan offers some guidance on the relative significance and sensitivity of known archaeological deposits. All development projects, events and general site works undertaking excavation require consultation with the Greater London Archaeological Advisory Service (GLAAS), which provides archaeological advice to the London Borough of Richmond and a desk-based assessment and watching brief undertaken as necessary.

Landscape and horticultural displays

Whilst we continue to protect and treasure our heritage at Kew Gardens, it is also important that the tradition of contemporary and high-quality landscape design continues on the site. Landscapes are dynamic and living entities and it is RBG Kew's responsibility to ensure that the development of the landscape is undertaken in a manner that responds to the existing historic landscape and buildings and reflects the very best of contemporary design.

Various planted landscape features will be developed and enhanced further into the future. Examples of priority landscapes include the Rose Garden, Azalea Garden, Mediterranean Landscape, Japanese Garden, Salvia Border, Rhododendron Dell, Woodland Garden, Great Broad Walk Borders, Agius Evolution Garden and the Rock Garden. Enhancement of Kew Gardens' gate areas to create more welcoming and inspiring entrances to the Gardens is also a priority, particularly at Victoria, Elizabeth and Brentford Gates.

Many of these areas, such as the Rhododendron Dell and Rose Garden are significant remnants of Kew Gardens' historic landscape and an understanding and reference to these past landscapes will be key to progressing new schemes in these areas. Development and design of major new horticultural projects are managed by RBG Kew's Garden Design team. The significance of the historic landscape must be considered at the start of the landscape design process, to inform the development of innovative, yet sensitive proposals for new displays in the landscape and to help retain the integrity of the Gardens' exceptional landscape history.

9.3.3. How do we build resilience into our landscape?

Looking to the future, management of the landscape needs to take a co-ordinated and balanced approach, taking into consideration the increasingly important roles of biodiversity, sustainability and effects of climate change.

Climate change

The climate is changing and even with current efforts to limit further increases in greenhouse gas emissions, further climatic changes are now inevitable in the future. There is now a need to adapt and manage the growing risk from climate change,

building resilience into our landscape as much as its possible. Projections in the most recent State of the UK Climate 2019 report show an increased chance of milder, wetter winters and hotter, drier summers. Weather patterns are likely to become more erratic, with greater frequency and intensity of extremes. This increases the risk of tree loss from storms, making it important to consider a long-term strategy for landscape succession and resilience. Equally, an increase in hotter, drier summers could have a major effect on plant growth, future plant selection and horticultural maintenance on site.

The warmer conditions expected with climate change could also allow some pests, disease-carrying insects and other animals, and invasive non-native species, to extend their range. Risks from new and emerging pests and diseases, and invasive non-native species, are high for Kew Gardens' landscape and collections. RBG Kew's Plant Health and Biosecurity team provides the vital horizon scanning, policy and protocol to manage this risk as much as is possible.

Resilience and succession

RBG Kew's ongoing Heritage Tree Conservation Programme, is a key component of the long-term strategy for improving resilience in our heritage tree collections and landscape. There are now over 100 trees managed as part of the programme, and the results have significantly improved tree growth and vigour.

Alongside improving the resilience of our trees, a strategic programme of young tree planting is in place to diversify the age of specimens across the site, setting up a succession within the landscape. RBG Kew's planting specification is key to ensuring young trees get established quickly, encouraging strong root growth. This helps build resilience against potential extreme weather conditions. However, there will likely be an increasing need to provide additional irrigation for young trees in the future, with the increased risk of periods of drought.

Sustainability and water management

RBG Kew holds ISO14001 certification which provides a valuable framework for planning, monitoring and reporting on all aspects of environmental sustainability across the site. Under the terms of ISO14001, RBG Kew's environmental management system is subject to a detailed external audit on an annual basis. All aspects of water and waste management and energy are monitored, reported and audited and this will continue.

Supply of water for irrigation during summer could become increasingly problematic in the future and rationing for all but essential uses is likely in critical areas. Water charges may increase over time, so efficient use of water is increasingly important. The installation of more efficient irrigation systems is currently underway, whilst increased capacity for rainwater harvesting and potential use of 'grey water' is an essential long-term planning consideration.

9.4. Objectives

The following key aims and objectives have been identified:

9.4.1. Maintain and enhance the horticultural quality of the Kew site as an internationally renowned botanic garden and World Heritage Site.

- 9.4.2.** Ensure that the landscape is managed in a sustainable manner, securing the long-term viability of the site.
- 9.4.3.** Protect and enhance the important heritage of the landscape at Kew including its underlying structure and form.
- 9.4.4.** Manage Kew's heritage tree collections, champion trees and key landmark trees for their health and long-term viability.

9.5. Key actions for 2020–2025

The following key actions are to be implemented:

- 9.5.1.** Maintain the landscape management zones across the site, ensuring that horticultural maintenance standards are consistently high and appropriate for the specific zone.
- 9.5.2.** Enhance the landscape through the development of major new horticultural developments on site, to be implemented in a sensitive and strategic manner.
- 9.5.3.** Implement a sustainable strategy for irrigation by installing and maintaining efficient irrigation systems, increasing rainwater harvesting, planning response to extreme droughts, and considering the potential for grey water recycling.
- 9.5.4.** Improve the bins and recycling facilities and aim for zero single-use plastics, minimising environmental impact as much as is possible.
- 9.5.5.** Conserve the historic landscape framework of the Gardens, continuing the long-term planting and pruning programme on key avenues and vistas including Pagoda Vista, Cedar Vista and Syon Vista.
- 9.5.6.** Develop and enhance historic planted landscape features through the reference to past landscapes and the existing historic environment.
- 9.5.7.** Develop a long-term strategy to strengthen and manage screening around the boundary of the site, with special consideration of the North Eastern and Riverside zones of the Gardens.
- 9.5.8.** Protect the identified location of archaeological deposits *in-situ*, and when necessary by investigation and recording.
- 9.5.9.** Work with the Thames Landscape Strategy to raise awareness of the contribution RBG Kew WHS and the Old Deer Park makes to the wider Arcadian Thames landscape.
- 9.5.10.** Continue amelioration work for all current and future heritage trees.



Kew Orchid Festival

10. Visitor engagement and experience

10.1. Introduction

Kew Gardens is now a major visitor attraction, achieving a record-breaking 2 million visitors in 2018/19. This success has largely been driven by major events such as Christmas at Kew, Orchids, our main summer programme and enhanced family activities, as well as major projects such as the opening of the Hive in 2016, the restored Temperate House in 2018 and the new Children's Garden in 2019.

Engagement of the public through visitor programmes and events has become a fundamental necessity for the Gardens' future development and sustainability as a World Heritage Site. Government grant-in-aid funding fell to 39% of RBG Kew's total income in 2019, leaving an increasing dependence on commercial income. RBG Kew's Marketing and Commercial Enterprise Directorate generates approximately one third of RBG Kew's operating income, which is half its self-generated income. These percentages are set to increase as grant-in-aid funding from Defra decreases. There is therefore a continuous need for Kew Gardens to maintain its relevance and appeal as a visitor attraction going forward. All income from RBG Kew's commercial activities serve to support the conservation of the Kew Gardens site and support the vital work of RBG Kew around the world.

RBG Kew is currently in the process of seeking to reposition its identity in the hearts and minds of the UK public, aiming to increase recognition of RBG Kew's scientific purpose. With this Brand Perception Shift project there is significant opportunity for further increase and diversification of our core customer and visitor base, aiming to expand our appeal to audiences that would not normally visit Kew Gardens or engage with our digital products.

RBG Kew is also currently undertaking a programme of work to better integrate visitor-facing systems such as ecommerce, retail, ticketing and customer relationship management to improve the user experience.

With increased visitor numbers comes greater strain on the site infrastructure, resources and the local area. There is therefore a priority to implement measures to ensure continued sustainability of the site and ensure visitor experience and the local community does not suffer. This section will consider the challenges this will pose and explore the opportunities for implementation in the future.

10.2. Notable achievements since inscription

Digital Experience (2014–2019) – There has been significant advancement of the online experience of RBG Kew, from the introduction of online ticketing in 2014 to the recently revamped website.

The London Curriculum (2016) – Kew Gardens features in the London Curriculum Key Stage 3 geography unit. This unit is available to all schools in inner and greater London, providing opportunities for pupils to learn about the role of RBG Kew in biodiversity and the importance of this issue on a global scale. The unit also promotes Kew Gardens as a prime location for studying ecosystems, rainforests, field studies, microclimates and biodiversity.

Temperate House Activity Plan (2018–2022) – Temperate House Restoration Project provided a platform from which to launch a four-year learning, participation and volunteer programme on site. RBG Kew's Youth Explainer Programme and community horticulture projects have been particularly successful and well attended.

Endeavour programme (2018) – Endeavour is an exciting online learning platform presenting a free series of challenges for Key Stage 2 and Key Stage 3, linked to the English National Curriculum and open to all UK schools. Launched in 2018 this digital platform will increase RBG Kew's reach and engagement with schools across the country, developing knowledge and understanding of RBG Kew's vital work in plant and fungal science.

Schools Learning Strategy (2018) – A key strategic objective for RBG Kew is to be a pre-eminent provider in public education and the Schools Learning Strategy, published in 2018, sets out how we will make a practical step change in our offer to schools, building on what we already do well, and improving for the future.

Interpretation Masterplan (2019) – RBG Kew's first Interpretation Masterplan has been developed to create a step change in how interpretation is delivered at Kew by creating a strategy and series of key narratives to be used as planning tools, aligning storytelling across the organisation.

10.3. Challenges and opportunities

10.3.1. Visitor experience

With increasing numbers of visitors and events at the Gardens, it is critical to consider ways of assessing and mitigating the negative impact of transport. RBG Kew promotes the use of sustainable transport via its website, but more could be done to facilitate this, especially for visitors with disabilities. Due to these issues being located off site, the implementation of this aim will require engagement with local government and the relevant transport authorities, providing support to joint initiatives to reduce impacts for local communities.

There is a need for improved visitor facilities on site in general, particularly across all the entrance ticketing

facilities at the entrance and the site-wide toilet facilities. There are five public access gates into the Gardens, with the Victoria Gate off Kew Road most intensively used, followed by the Elizabeth Gate off Kew Green. Whilst the ticketing facility has been greatly improved with the introduction of online ticket sales, Victoria Gate frequently becomes congested at peak times. As the main point of entrance for our visitors, Victoria Gate does not give the sense of scale, quality and excitement that would be expected.

10.3.2. Orientation and circulation

Wayfinding in the Gardens is poor, making navigation and orientation very difficult on site. The current grey finger post system has been badly maintained and there is little alignment between the visitor entry experience, map and wayfinding signs. A key objective for RBG Kew is to ensure that visitors are able to navigate from the main stations and ferry terminal to the Gardens and then easily find their way around the site as part of their visitor experience. To achieve this a complete review of wayfinding is required, and the development of a new wayfinding strategy and signage family.

A Wayfinding Project is currently in progress with consultant support and follows on from the needs identified in the 2002 Site Development Plan: Framework for Future Development by Wilkinson Eyre Architects, which proposed the 'Arc plan'. The Arc plan identified the need to move visitors from the 'honey pot' experience of the Palm House and Orangery Precinct deeper into Kew Gardens by creating Sackler's Crossing and further additional paths. The wayfinding project will support this work, making it easier for visitors to see the full extent of the experience on offer and how to find key locations. Strategic guidance for visitors to permeate the whole of the site will also reduce the pressures on site facilities and erosion of the landscape.

10.3.3. Interpretation

Effective interpretation is key to assisting visitors in the discovery and appreciation of the site and the work undertaken at RBG Kew. It is also of paramount importance to communicating RBG Kew's mission, core values, designation as a WHS and its OUV. Historically, the Gardens have lacked a single Interpretation Strategy, resulting in variable tone, content and design found in signage across the site. Interpretation at Kew Gardens is delivered by a number of different directorates and teams, which has further exacerbated the inconsistencies in style found across the site. The development of a signage family for the Gardens, through the creation of in-house design guidelines, will greatly benefit the intelligibility and cohesiveness of the Gardens and help create a high-quality landscape that reflects Kew's significance and aspirations.

Alongside this, RBG Kew's Interpretation Masterplan (2019) has been developed to address inconsistency across the site. The strategy sets a series of key narratives to be used as planning tools regardless of which directorate is delivering the interpretation, thereby aligning storytelling across the organisation (Figure 4). The historic transformation of the Gardens, its royal heritage and wider relationship with the Arcadian Thames is particularly under-interpreted and will be

addressed under the 'Heritage Kew' theme. Information about Kew's purpose and UNESCO status will also be incorporated into orientation signage at entrances, to ensure better visibility of Kew Gardens' WHS status and OUV.

An audit of interpretation panels at Kew Gardens was undertaken in 2019 and flagged signs as medium or high priority for replacement. Implementation of the Interpretation Masterplan aims to have all old signs replaced by 2025.

10.3.4. School visits

Education is a key aspect of RBG Kew's statutory duty, with equal importance placed upon it by UNESCO in its guidance. RBG Kew offers a range of programmes for schools, higher education and vocational training. RBG Kew's Schools Programme is particularly successful, but there remains significant opportunity to increase engagement with schools with high Pupil Premium (indice of low income).

Visits by schools are now so popular that a cap on bookings per day has been put in place. With such high volumes there is a need for greater management of group timings and activities to spread demand across the site. This is being addressed in the Schools Learning Strategy, which is under development for implementation between 2019 to 2024. The lack of appropriate learning spaces and facilities are a constraint to RBG Kew developing its schools learning offer. This is under review and a dedicated learning centre is being considered. This may also enable RBG Kew to expand its Adult Education Programme beyond current limits.

10.3.5. Access for all

A key objective for RBG Kew is to ensure equality of access for all its visitors and to diversify our appeal to a wider audience (both demographic and attitudinal). With increasing admission charges, there is a need to offset the financial barriers this can cause, by increasing free admission, concessionary admissions and community outreach programmes.

Site accessibility continues to be reviewed and improved where possible. Recent refurbishment and new build projects have enabled RBG Kew to greatly improve building design and facility for all needs. Alongside investment in the site fabric and infrastructure, continued development of RBG Kew's Community Membership Scheme and Discovery and Access Programme are key to facilitating access to Kew by people who face physical, sensory, psychological or social barriers to visiting.

10.3.6. Commercial events and visitor programmes

With increasing need for unrestricted income to balance decreasing government funding, income from commercial enterprises is ever more important. Festivals, events and exhibitions are all important drivers for new audiences and repeat visits.

Events at Kew Gardens often require the use of sensitive buildings, glasshouses and outdoor areas, which require careful protection and consideration when used. There is also competition for the use of space, and a need to ensure key attractions remain open for public enjoyment during the Gardens' open hours. The high volume of visitors over repeat



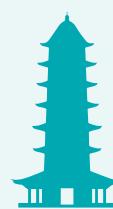
Kew Science

Stories about the role of science at Kew; scientific stories about plants and fungi



Kew Horticulture

Stories about horticulture, gardening and plants



Heritage Kew

Stories about the historic legacy of Kew and cultural stories about plants



Wild Kew

Stories about the natural history of the landscapes at Kew and Wakehurst



Sensory Kew

Stories that highlight the sensory nature of the visitor experience



Sustainability at Kew

Stories that highlight sustainable practice at Kew

Figure 4: Themes for Interpretation

events, such as Christmas at Kew, puts great pressure on the landscape, its infrastructure and historic buildings. Such enterprises require careful management and coordination with internal stakeholders to ensure the highest protection and care of Kew's invaluable assets.

Local residents and stakeholders may also hold concerns over impact from high visitor numbers in the local area, increased noise and rubbish. RBG Kew is working with Richmond Council and local residents to address these concerns. A Travel and Event Plan is currently in development and will identify areas where RBG Kew can invest in and promote improvements in the local area. Active and open engagement with Kew's local community is critical moving forward, to ensure events are managed in a considerate, sustainable manner.

10.3.7. Membership

RBG Kew has a membership scheme of approximately 100,000 members generating important unrestricted income. As well as income generation, members are an engaged audience with whom we communicate regularly about events and activities in the Gardens, as well as our science work. Members make up around 50% of all visitors and are therefore a core part of our visitor experience. As we seek to grow our membership scheme, this will put more demand on our visitor facilities, as detailed in 10.3.1.

10.4. Objectives

The following key aims and objectives have been identified:

- 10.4.1.** Expand visitors' understanding of the diverse world of plants through the provision of engaging and authoritative interpretative information linked to the living plant collections, including compelling stories about RBG Kew's global and local activities and impact.
- 10.4.2.** Embed RBG Kew's core message and designation as a WHS at key points in the visitor experience.
- 10.4.3.** Increase RBG Kew's visitor and membership numbers in a sustainable manner through the delivery of innovative and engaging visitor programmes and events, which raise awareness of the work of RBG Kew and the WHS.
- 10.4.4.** Enhance the visitor experience by delivering high quality visitor facilities and services.
- 10.4.5.** Provide first class inspirational learning experiences for all.

10.5. Key actions for 2020–2025

The following key actions are to be implemented:

- 10.5.1.** Implement Interpretation Masterplan over 2019 to 2025.
- 10.5.2.** Work with HRP to provide new visitor interpretation on Kew Gardens' Georgian period, landscape history and archaeological remains through a Georgian Kew Gardens trail and precinct map for the Palace complex.
- 10.5.3.** Deliver Kew's Wayfinding Project by 2021.
- 10.5.4.** Maintain Christmas at Kew and Kew the Music at current levels of popularity, alongside the development of a programme of smaller events.
- 10.5.5.** Deliver a rich public programme of events, exhibitions and festivals which will drive visitor numbers and enable us to communicate RBG Kew's mission and values to a broader audience.
- 10.5.6.** Design and deliver new ticketing facilities at Brentford, Elizabeth and Lion entrance gates by 2022.
- 10.5.7.** Improve the quality and capacity of the toilet facilities across the site.
- 10.5.8.** Replace the White Peaks restaurant.
- 10.5.9.** Develop the Victoria Gate redesign proposal.
- 10.5.10.** Work with local government and communities to develop a strategic Travel and Event Plan, promoting the use of public transport and cycling for the Kew area by 2021.
- 10.5.11.** Implement priority actions from the Schools Learning Strategy between 2019 and 2025.
- 10.5.12.** Prepare a specification for a new learning centre at Kew to include a laboratory and growing area that reflects and links to the work of RBG Kew.
- 10.5.13.** Develop Kew's Community Membership Scheme and deliver the Discovery and Access Programme to provide monthly British Sign Language tours, health walks, dementia friendly tours and autism tours; develop access bags to enhance visitors' experience.



In 2019 over 230 knitters assembled at Kew to knit a series of squares to form a representation of a section of cotton's (*Gossypium raimondii*) genome sequence in Community Learning and PAFTOL's Knitathon



11. Scientific Endeavour

11.1. Introduction

Science has always been the heart of RBG Kew's purpose as a World Heritage Site and it will continue to be so. It is also a key element of Kew's primary statutory duty to '*carry out investigation and research into the science of plants and related subjects and disseminate the results of the investigation and research*' (National Heritage Act, 1983).

RBG Kew's collections, scientists and global partnerships enable RBG Kew to make an invaluable and highly relevant contribution to some of the biggest issues facing the global population. This is achieved through research, conservation, and educating and inspiring the public about the importance of plant and fungal science.

RBG Kew has over 300 highly skilled scientists, curators and technicians working across four purpose-built buildings: the Herbarium, the Jodrell Laboratory and the Banks building (located at Kew Gardens) and the Millennium Seed Bank (located at Wakehurst Place). The combination of world-class expertise and collections makes Kew a truly global resource in plant and fungal knowledge.

RBG Kew's extensive international network of individual partners and consortia have scientific activities and collaborations spanning 110 countries worldwide. Much of the fieldwork and sharing of information that RBG Kew undertakes in order to achieve its scientific objectives is dependent on working in partnership with key organisations, individuals and communities in these countries. RBG Kew also delivers an extensive programme of training and capacity building. Primary stakeholders are UK and global scientific institutions, governments, research councils, industry, international conservation and development agencies, and the public. As part of the Defra Network, RBG Kew plays an active role in delivering the department's policy objectives.

11.2. Notable achievements since inscription

Science Strategy (2015–2020) – RBG Kew's first Science Strategy was published in 2015 and set out strategic priorities and key projects for a five year period. It was developed in tandem with a major re-organisation of RBG Kew's scientific resources that, along with the strategy, provided much needed focus and clarity on Kew's scientific output. The following strategic outputs were identified to deliver Kew Science's strategic priorities:

- Plants of the World Online Portal
- State of the World's Plants
- Tropical Important Plant Areas
- The Plant and Fungal Trees of Life
- Banking the World's Seeds
- Useful Plants and Fungi Portal
- Digitising the Collections
- Training the Next Generation of Plant and Fungal Scientists
- Science in the Gardens

State of the World's Plants (2015) – First launched in December 2015, RBG Kew's State of the World's Plants report and symposium is an annual overview of the global status of the plant kingdom. In this important new initiative, RBG Kew scientists combine their extensive knowledge and expertise in a definitive, hard-hitting evaluation of the status of plants. In addition to providing new evidence and perspectives on a range of key issues, the report acts as an important horizon-scanning exercise to identify strategic research and policy priorities to be pursued both in the UK and overseas. www.kew.org/science/state-of-the-worlds-plants-and-fungi

Kew MSc, Plant and Fungal Taxonomy, Diversity and Conservation (2015) – launched in 2015, RBG Kew's new MSc programme has been designed to directly address the skills gap in taxonomy and systematics identified by the Natural Environmental Research Council and Living with Environmental Change in their 2012 report 'Most Wanted II. Postgraduate and Professional Skills Needs in the Environment Sector'. The programme is designed to equip students with the knowledge and skills to undertake research in the fields of taxonomy, molecular systematics, ecology and evolution, or to engage in more applied conservation work. Kew's scientific higher education offer continues to expand. www.kew.org/science/training-and-education/msc-plant-and-fungal-taxonomy-diversity-conservation

Science Quality and Impact Review (2019) –

A comprehensive review of Kew Science undertaken by an international, expert panel led by Sir Charles Godfray. In addition to assessing RBG Kew's previous achievements, the review provides advice on how to best move forward to maximise the quality and impact of Kew Science into the 21st century. www.kew.org/about-us/reports-and-policies/quality-and-impact

Notable Kew Science publications – Science Collections Strategy 2018–2028; two brochures containing abstracts of all Kew Science-led publications (for the academic years 2016–17 and 2017–18) and in 2019, following the Science Review, we produced a report entitled '*Unlocking why plants and fungi matter. Impacts from Kew Science 2012–2018*'. www.kew.org/science/our-science/publications-and-reports/publications

11.3. Challenges and opportunities

11.3.1. Facilities

Key to ensuring RBG Kew's leading role in scientific research is the maintenance and development of the facilities needed to support its scientific staff and collections.

The needs of scientific endeavour at RBG Kew are extensive, requiring working space, library facilities, laboratories, administrative support, research grants, and many other elements. Continued investment in these resources is key and long-term plans are needed to ensure facilities are maintained as compliant and relevant. Currently many of the collections need additional space for both storage and study, requiring the development of new facilities over and above the current capacity. To meet RBG Kew's needs now and into the future, a new building or significant refurbishment is required, to respond to current and evolving science needs and provide optimum working environments for staff.

11.3.2. Visibility

Kew Science is currently based across several buildings on site and remains largely inaccessible and invisible to the public.

In order to drive awareness and increase visibility of RBG Kew as a world-leading scientific institution, an ambitious new project is required. Proposals to bring all of Kew Science into one building on site poses a great opportunity for promoting an interdisciplinary working culture, as well as enhancing public engagement and interpretation of Kew Science and the Science Collections. This need and aspiration has led to proposals for a new Science Quarter, that would become a magnet for attracting the world class scientists and students that make Kew Science unique.

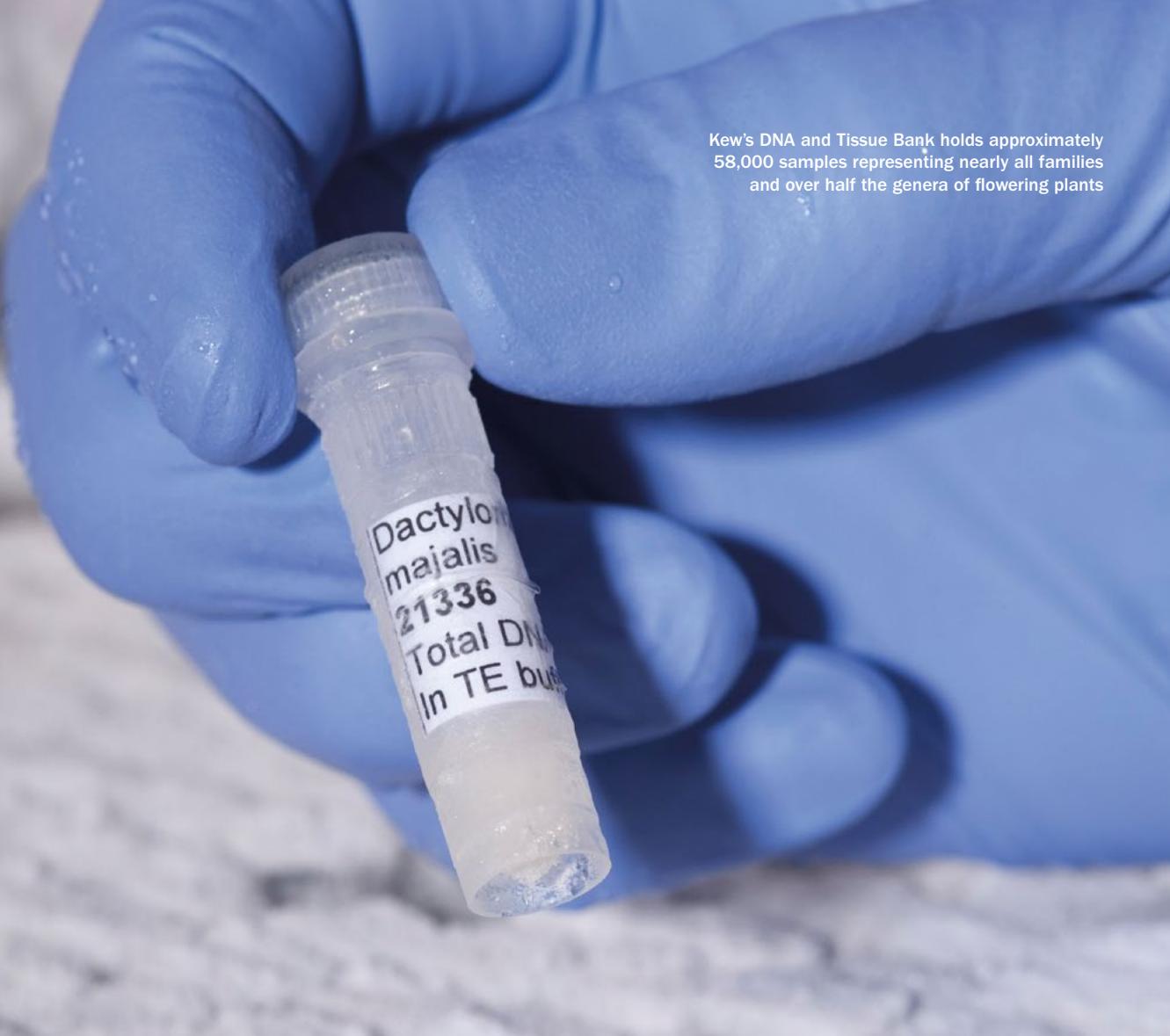
Key to such a project would be taking sensitive approach to new development on site, with preservation of the significance of the Herbarium and its setting of critical importance.

11.3.3. Funding

RBG Kew's core scientific output in taxonomic services provides the foundation upon which other plant and mycology related research can build. Such endeavours require long term, stable financing, justifying Kew's continued need for direct government funding.

An inquiry into RBG Kew's funding issues held by the Commons Science and Technology Committee in 2015 determined that government austerity posed a high risk to the type of fundamental long term research undertaken at Kew. The inquiry concluded that RBG Kew's scientific role required secure, long-term funding to ensure its sustainability

Kew's DNA and Tissue Bank holds approximately 58,000 samples representing nearly all families and over half the genera of flowering plants



and relevance. Going forward it is critical that RBG Kew retains ongoing, stable operating and capital investment from the government with which it can deliver its long-term research strategy. This will need to be further supplemented by research grant awards for shorter term projects and funds raised through RBG Kew's charitable arm Kew Foundation.

11.4. Objectives

The following key aims and objectives have been identified:

- 11.4.1.** Document and conduct research into global plant and fungal diversity and its uses for humanity.
- 11.4.2.** Curate and provide data-rich evidence from Kew's unrivalled collections as a global asset for scientific research.
- 11.4.3.** Disseminate our scientific knowledge of plants and fungi, maximising its impact in science, education, conservation policy and management.
- 11.4.4.** Develop the facilities and resources needed to support Kew's role as a world-class centre for scientific research and biodiversity conservation.

11.5. Key actions for 2020–2025

The following key actions are to be implemented:

- 11.5.1.** To undertake a lesson learnt assessment and consultation on the success of the strategic outputs from Science Strategy 2015–2020.
- 11.5.2.** Develop and publish a new Science Strategy for 2021–2025.
- 11.5.3.** Support the design and development of a new Science Quarter with world-class facilities for research and opportunity for public engagement.
- 11.5.4.** Increase quality applications for grant funding and high-impact academic publications.



The Hive

12. Managing development within the WHS

12.1. Introduction

As a world-leading botanic garden, research institution and visitor attraction, RBG Kew will continue to need to invest in new facilities to deliver its mission, sustain its OUV and meet the needs of its staff and visitors. Delivering new development within the Gardens has the potential to change the character and appearance of the landscape, affect its underlying historic structure and potentially affect the OUV of the WHS. Sensitive design and placement of all proposed developments, whether they be new buildings, new sculptures or new garden areas is therefore required.

RBG Kew's future strategic development requirements will be identified in the Development Plan, which will outline development priorities over the next 10 to 15 years. Given the inherent sensitivity of the site, it is recognised that considerable care will be required on the design and delivery of these development requirements, which must be informed by Heritage Impact Assessments (HIAs) to avoid or mitigate harm. The following section will highlight the challenges and opportunities identified in meeting the objectives of the Development Plan moving forward.

12.2. Notable achievements since inscription

Over the last 15 years a number of significant new developments have been successfully incorporated into the WHS to help achieve RBG Kew's mission. These include:

- Jodrell Laboratory extension, Wolfson Wing (2006)
- Davies Alpine House (2006)
- Sackler Crossing (2006)
- Treetop Walkway (2008)
- Shirley Sherwood Gallery of Botanical Art (2008)
- Herbarium extension, Wing E (2010)
- Quarantine House (2011)
- Temperate House Propagation Facility (2015)
- The Hive (2016)
- Arboretum Nursery (2018)
- Pavilion Restaurant (2019)
- Children's Garden (2019)

12.3. Challenges and opportunities

12.3.1. Principles for development on site

New developments will be located and designed in a manner sensitive to the setting of the historic landscape and buildings in their vicinity. A key principle will be the repurposing of existing buildings as much as possible, aiming to not exceed the current built footprint on site into the future. To facilitate this strategy, a 10–15 year Development Plan is in process, which will utilise a linked mapping and database system enabling better visibility for planners and decision makers wanting to assess the impacts of change on the site as a whole.

RBG Kew has established processes for developing design proposals including the use of advisory panels, external consultants and engagement with external stakeholders and decision makers. Heritage Impact Assessments are key to this process, supporting the development of sensitive and informed design proposals. Past projects on site have demonstrated RBG Kew's ability to deliver sensitive and high-quality design that safeguards the OUV of the WHS. Continuing this success will require considerable investment in the design and delivery process for all schemes.

All temporary structures and events in the Gardens must be carefully positioned and designed to be sensitive to the historic environment, avoiding potential damage to historic buildings, archaeology and the landscape. Internal guidelines will be developed following Historic England's published guidance (Temporary Structures in Historic Places, 2010).

12.3.2. Current detractors

The development programme also offers a significant opportunity not only to support RBG Kew's mission, but also to improve the character, appearance and functionality of the Gardens. There are some buildings within the Gardens of low design quality that do not contribute to the OUV of the WHS and are no longer fit for purpose. The opportunity exists therefore to either sensitively renovate and improve these buildings or remove and replace them. This process could deliver significant benefits for the WHS.

Both the White Peaks restaurant and the Sir Joseph Banks Building have been identified as opportunity areas for improving the character of the Gardens by removing and re-landscaping or replacing them. The Sir Joseph Banks Building in particular was identified in the 2016 Estate 2025 Report (Montagu Evans, Equals & Colley Associates) as unfit for its current purpose of housing the Economic Botany collection due to its deficient power, heating, ventilation and humidity control as well as the poor condition of the building fabric. Whilst the White Peaks restaurant has continued to be functional and fit for purpose, it is now well beyond its lifespan as a building and its replacement is a good opportunity to reduce the built footprint of the site to improve the landscaping and setting of this part of the Gardens.

12.3.3. Infrastructure and facilities

The increase in visitor numbers alongside the needs of RBG Kew's scientific research has resulted in demands on the infrastructure of the site reaching the limits of capacity.

Investment in the site's physical infrastructure (such as roads, paths and visitor facilities), buildings and upgrades to the power and electricity are fundamental to RBG Kew's ability to continue to meet its business needs and obligations.

12.3.4. Kew Leases Act

Within the WHS there are a number of buildings under RBG Kew management that are not required for core functions and currently require renovation to bring them into a state of viable use. These buildings are predominantly residential properties along Kew Green, several of which are listed and require significant measures to safeguard from further decline. This will require substantial investment which lies outside of RBG Kew's budget and core purpose.

As Kew Gardens is 'Crown Land' governed by the Crown Land Act 1702, leases are currently limited to 31 years. This restriction makes it difficult to secure much-needed commercial interest and investment in non-core buildings (such as Kew's residential properties). The Kew Gardens (Leases) No. 3 Bill was introduced to Parliament in late April 2019 and passed, receiving Royal Assent in September 2019. This new Act will enable RBG Kew (through Defra SoS) to grant leases of up to 150 years, which will attract much needed commercial interest and investment.

12.4. Objectives

The following aims and objectives have been identified:

- 12.4.1. Buildings which contribute to the OUV of the WHS, or are of historic significance in their own right, will be maintained and used.
- 12.4.2. Address all low quality buildings that do not contribute to the OUV of the WHS through the development programme.
- 12.4.3. New development will enhance and safeguard the character and appearance of the WHS including views into and out of the WHS and the setting of key buildings within the WHS.
- 12.4.4. New development will seek to achieve high standards of sustainability and will use materials that reflect and respond to the character and appearance of the WHS.
- 12.4.5. New development will be designed and specified in consultation with the relevant local, national and international decision-makers and stakeholders, to safeguard the site's heritage assets, including archaeological remains, as required.

12.5. Key actions for 2019–2025

The following key actions are to be implemented:

- 12.5.1. Publish and implement a 10- to 15-year Development Plan.
- 12.5.2. Development and implementation of a Residential Buildings Strategy for Kew's residential properties, which secures best value for public money and adequate legal protections for safeguarding the OUV of the WHS.



Japanese Landscape

- 12.5.3.** Review existing building stock to identify buildings for redevelopment, removal or replacement (buildings that no longer serve a clear function and do not contribute to the OUV of the WHS).
- 12.5.4.** All new development proposals will be subject to a Heritage Impact Assessment, in accordance with ICOMOS Guidance (2011), in addition to any requirements for planning permission.
- 12.5.5.** Establish design guidance and briefs for proposed strategic developments, taking into account potential impacts on the OUV of the WHS and significance of other assets.
- 12.5.6.** Develop guidelines for temporary structures and events at Kew Gardens.

- 12.5.7.** Deliver the following developments to address identified key issues and requirements:
 - Progress the design of the Science Quarter Project
 - Open the new Family Restaurant by 2021
 - Complete the Arboretum HQ by 2021
 - Replacement of the ticketing facilities at Brentford Gate, Elizabeth Gate and Lion Gate by 2020–21
 - Replace the White Peaks restaurant by 2022
 - Replacement of old nursery facilities as propagation and decant facilities in preparation for Palm House restoration project



Great Pagoda

13. Managing development in the setting of the WHS

13.1. Introduction

As set out in Sections 2.7 and 3.3 and Appendix D, the setting of the WHS is an integral aspect of its character and form and makes a significant contribution to the OUV of the WHS and our ability to appreciate that OUV. Change outside of the WHS, both within and outside of the buffer zone, has the potential to adversely or beneficially affect the OUV of the WHS and people's ability to appreciate it.

In accordance with national, London-wide and local planning policy, as well as international guidelines and conventions and national legislation (see Section 1.4 and Appendix B), it is vital that change outside of the WHS is managed to prevent harm and wherever possible deliver improvements. This section addresses these matters. Decision-makers, such as London Borough of Hounslow (LBoH), London Borough of Richmond-upon-Thames (LBRuT), the Greater London Authority (GLA) and the Secretary of State (SoS) for the Ministry of Housing, Communities and Local Government's (MHCLG), have a responsibility to ensure that the qualities of the WHS and its OUV are taken into account in the planning process and given great weight in that planning balance.

13.2. Notable achievements since inscription

In relation to managing change in the setting of the WHS the following has been achieved since inscription:

- Adoption of the Supplementary Planning Guidance (SPG) on London's World Heritage Sites – *Guidance on Settings* (2012), which provides a clear assessment process for managing change (GLA).
- Strengthening of the National Planning Policy Framework (2018) and the National Planning Practice Guidance

(2019) to reinforce the importance of World Heritage Sites as assets of the highest importance and the need to protect their settings (MHCLG).

- Adoption of the Hounslow Local Plan (2015–2030) and Richmond Local Plan (2018–2033) which include policies specific to the Kew WHS and its setting (LBoH and LBRuT).
- Retention and strengthening of the key boundary features around the WHS including tree belts and walls which contribute to its sense of enclosure and separation (key aspects of its setting) (RBG Kew).
- Improved management of key designed vistas and views within the WHS (RBG Kew);
- Restoration and re-opening of the Pagoda to visitors enabling people to appreciate views of the Gardens from this structure and understand the wider landscape around Kew Gardens (HRP).
- Rejection of a number of schemes outside of the WHS that would have adversely affected its setting (SoS, LBoH and LBRuT).

13.3. Challenges and opportunities

The historic landscape design, the built architecture of the site, and the experience of place that is derived from these, are all central to the OUV of the property. Kew Gardens is, with a few key exceptions (such as Syon Vista), an internally-oriented landscape, and preserving the integrity of this setting from external intrusions plays a fundamental role in supporting its OUV. The WHS has a very specific set of relationships with its setting, which are an integral part of its design, its experience and therefore of its OUV. The visibility of a number of existing external developments has already had a negative impact on the setting of the WHS, as identified by ICOMOS in their 2003 Advisory Body Evaluation and the previous Management Plan. Other external factors,

such as aircraft noise, are also having a harmful impact on the WHS. Future developments could further detract from the OUV of the WHS. These issues are expanded on in appendix D and are summarised below:

13.3.1. Existing external developments

The open sky character of Kew and its wider setting are vulnerable to unsympathetic development. Historically, the setting of Kew Gardens has been challenged and degraded by built development in and around the Brentford area. This trend continues with external development continuing to have an impact on the setting of the WHS. Key issues include:

Key Issues include:

- **Haverfield Estate towers:** These six 1970s tower blocks are a particularly prominent feature of the urban landscape in Brentford. They have a significant visual impact on the setting and character of the Gardens, particularly in relation to the Riverside Zone, Entrance Zone, North Eastern Zone and Palm House Zone. They overtop the screening afforded by the tree planting within the Gardens; are framed in views northwards along the Broadwalk; significantly intrude into views from and across the former Great Lawn; overtop the Orangery; appear directly behind and alongside Kew Palace in frontal views; severely detract from the quality of views from the rear of Kew Palace and from its upper floor windows; and appear in glimpsed, often seasonal, views from across the Gardens including from near the Palm House, across the Palm House Pond, from the Order Beds and neighbouring areas. They are currently the single most harmful external development outside of the WHS.
- **Kew Eye:** This single tall building is situated in Brentford to the west of the WHS and was completed in 2014. It is particularly intrusive into views from the Riverside Zone and into the visual setting of Kew Palace, particularly in views from the rear of building and key views of the Palace from the south / southeast. The building also appears in glimpsed views from other locations within the gardens such as from the path junctions at the southwestern end of the Great Lawn. These views add to the sense of external development overtopping the screening afforded by the tree planting.
- **Waterworks/British Gas Development:** This modern mid-rise and high-rise development lies to the southeast of the Haverfield Estate towers. Although not as tall or visually intrusive as the Haverfield Towers it still protrudes above the skyline in number of locations in the Entrance Zone and Riverside Zone. Its form infilling gaps between the Haverfield Towers and increasing the visual prominence of development in the Gardens. The development also has a harmful impact on the setting of Kew Palace.
- **Vantage West:** The primary issue for this building lies in its location on the alignment of the Pagoda Vista and hence, due to its height, its appearance behind the Palm House in views along the vista. This is a significant visual intrusion into a key designed view within the Gardens.
- **BSI Building:** This relatively modern tall building lies to the northeast of the WHS. It features in general views from the Temple of Aeolus over the Order Beds and

detracts from these views. It also appears in winter in glimpsed views of the Temple from the west.

- **Kew Road buildings:** A number of buildings along Kew Road protrude over the wall creating a degree of visual intrusion. A particular issue exists with a group of buildings, near to the junction of Lichfield Road, that appear in views southeast along the Broadwalk.
- **Brentford Stadium:** Tall buildings within this development overtop the Orangery in some views as well as impact views from the Great Lawn area. These impacts further increase the visual intrusion of external development into the landscape of the WHS.

13.3.2. Future developments

As well as the existing development highlighted above, future developments around the WHS also have the potential to negatively affect the setting of the WHS and harm its OUV should they be constructed. These include the consented, but undeveloped, Citadel scheme which if constructed would be visible in views of the Orangery and from the upper floors of Kew Palace.

13.3.3. Other external factors

As well as external development there are a small number of other non-development factors that also affect the WHS these include:

- Aircraft noise and pollution from Heathrow flights and the potential Heathrow expansion
- Traffic noise and air pollution from Kew Road

Feedback from first-time visitors frequently refers to the level of noise from aircraft flying over the Gardens and the impact it has on people's experiences in the Gardens. It was also identified as a negative impact on the WHS by ICOMOS in their 2013 Periodic Report.

RBG Kew would welcome any opportunity for a reduction in aircraft noise and is opposed to an additional runway, night flights, or anything that would greatly increase the number of flights over the Gardens. One of the top three motivations to visit Kew Gardens is to escape the city to a relaxing, natural space and this is particularly true for our London based audience where green space is at a premium.

RBG Kew are engaging with and responding to Heathrow airspace change and airport expansion consultation to voice concerns regarding any increase on this current negative impact. Whilst RBG Kew has authoritative views on botanical and horticultural matters, it is not a lobbying organisation and has therefore not taken a leading role in opposing the Heathrow expansion.

13.3.4. Cumulative impact/harm

The existing detractors around the WHS (as set out above) cause significant harm to the setting and OUV of the WHS.

As established in national, London-wide and local planning policy (see Section 1.4) it is important that this existing harm is taken into account when determining proposed developments. Additional harm must be understood as being cumulative with existing harm.

World Heritage Sites are designated heritage assets of the highest significance and great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). Any harm should be given great weight in the planning balance and harmful developments should be resisted.

13.4. Policy objectives

The following policy objectives have been identified. It is important to note that the achievement of these is largely reliant on the actions and decisions of the relevant planning authorities including the LBoH, LBRuT, GLA and SoS.

- 13.4.1.** Work with external partners to ensure no further harm to the OUV of the WHS from inappropriate development within the WHS buffer zone and wider setting.
- 13.4.2.** Promote awareness of the OUV of the WHS as a material consideration in planning decisions. To be achieved through working with external partners and ensuring links to the WHSMP are provided on Local Planning Authority planning webpages.
- 13.4.3.** Seek to reduce the scale of existing harm to the OUV of the WHS from unsympathetic buildings within the WHS buffer zone and wider setting when and where possible.
- 13.4.4.** Maintain the setting of the WHS through appropriate management of planting, and vistas within the WHS.

13.5. Key policy actions for 2020–2025

The following key actions will need to be implemented by RBG Kew and external partners:

- 13.5.1.** Work with external partners to ensure that strategic development proposals and plans for land within the LBH and LBRuT safeguard the OUV of the WHS from unsympathetic development within its buffer zone and wider setting. To be achieved via Steering Group discussion and by engaging in Local Plan consultations (2019–25).
- 13.5.2.** Work with external partners to ensure that conservation of the OUV of the WHS is given great weight when considering the impact of development proposals on the setting and OUV of the WHS, with particular consideration of the potential cumulative impacts of new developments with existing development and other proposed schemes. To be achieved via Steering Group discussion and by engaging in Local Planning Authority consultations (2019–25).
- 13.5.3.** Ensure the continued monitoring and review of all planning applications that may affect the OUV of the WHS and key buildings within it to determine where OUV, WHS policies and WHS Management Plan should influence decision-making (2019–25).
- 13.5.4.** Ensure the promotion and visibility of the WHS Management Plan as a material consideration in the assessment of development proposals by making the Plan accessible on RBG Kew's webpages and the Planning webpages of LBH and LBRuT.
- 13.5.5.** Work with external partners to explore long-term opportunities to reduce the scale of existing harm through managed replacement of existing harmful development (2019–25).
- 13.5.6.** Work with external partners to explore the potential use of 3D computer modelling software to better assess cumulative impact of development proposals and enable views analysis (2019–25).
- 13.5.7.** Review the existing buffer zone with external stakeholders to determine effectiveness and identify the need for any changes to its extent (2020–21).
- 13.5.8.** Work with the Thames Landscape Strategy to implement key elements of the Thames Landscape Strategy to improve the quality of the riverside environment (2019–25).
- 13.5.9.** Maintain and strengthen boundary tree belts and other screening features to safeguard setting of the WHS (2019–25).
- 13.5.10.** Maintain and improve internal vistas, key walks, the riverside environment and the environs of key buildings to safeguard setting of WHS through the implementation of new designs (where appropriate), ongoing management and, if appropriate, new planting (2019–25).

Davies Alpine House



14. Action Plan

RBG Kew is the lead body responsible for implementing the Action Plan in cooperation with its on-site and off-site partners (see Figure 5). The WHS has a dedicated Steering Group tasked with overseeing the implementation of the Management Plan's objectives and vision, which meets quarterly. The group also acts as a multi-agency liaison panel to ensure that the site and its values are properly taken into account in wider decisions that may affect the OUV of the WHS.

The WHS Management Plan is an operational and planning document, to be used by RBG Kew and key stakeholders to inform policy decisions, assist in planning decisions, inform capital development planning and revenue expenditure, and aid discussion with potential funding partners. The WHS Management Plan aims and policies can be achieved

through a range of projects, ranging from capital projects to maintenance plans. The availability of funding will determine the rate of implementation, but equally important is a certain flexibility to allow the Plan to respond to government funding fluctuation and project sponsorships. The Action Plan provides the basis from which to monitor progress towards achieving the WHS Management Plan objectives and will be reported against at the WHS Steering Group meetings. The WHS Management Plan will be reviewed again in 2025 and evaluation of its success and any changes will inform the development of the next Management Plan.

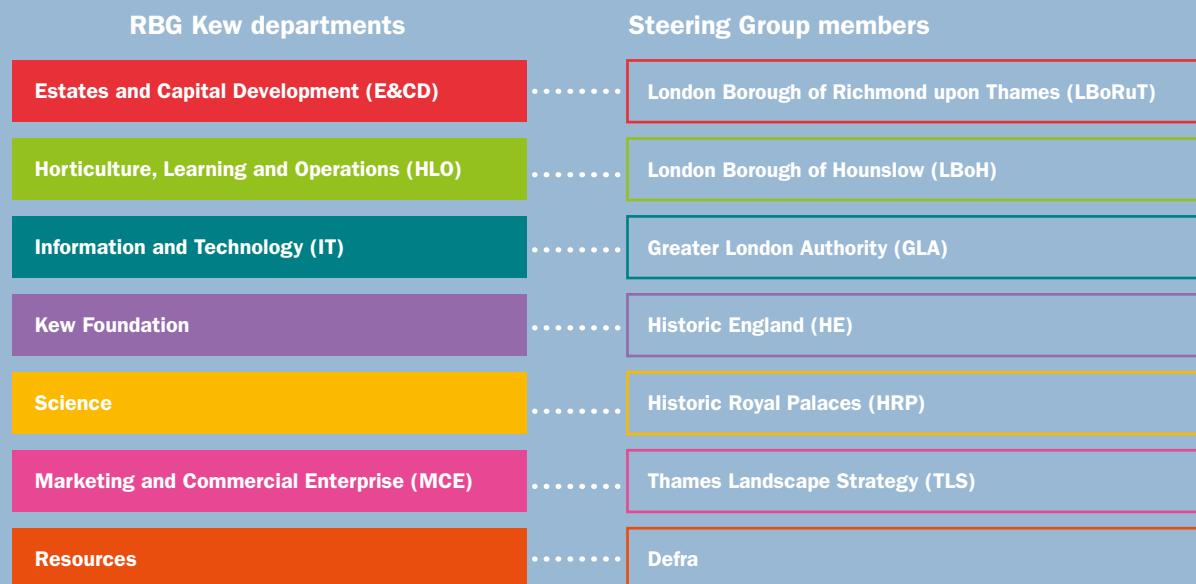


Figure 5: Kew Gardens World Heritage Site partners and Steering Group members

Aims	Actions	Lead department and key partners	Time frame
Risk and disaster management			
5.4.1. Identify and monitor potential threats to the site and ensure that appropriate emergency plans and strategies are drawn up and implemented to mitigate threats.	5.5.1. Ensure an emergency plan is in place for all identified risks to the collections (living and preserved), including (but not limited to) loss of heating, loss of irrigation water, extreme drought, flooding and pest outbreak and garden evacuation in the event of a terror attack.	Resources E&CD Science HLO	2 years
	5.5.2. Complete safety manuals for all key buildings and develop salvage plans for their contents, aiming to have documentation in place ready for audit and testing in 2020.	E&CD Science	1 year
5.4.2. Ensure that RBG Kew's risk arrangements are kept under constant review and that they remain relevant and up to date.	5.5.3. Ensure current fire and flood control measures work and that a robust maintenance and testing regime is in place.	E&CD Resources	Ongoing
5.4.3. Improve building compliance and precautions to mitigate against known risk of fire and flood to collections.	5.5.4. Design suitable long-term storage for the collections in the new Science Quarter Project.	E&CD Science	5 years
	5.5.5. Ensure documented flood plans including emergency response to a flood and proactive response to high-tide alerts are in place for 2020.	Resources	1 year
	5.5.6. Engage with the Environment Agency on the long-term integrity of the flood defences protecting the Herbarium.	Resources E&CD	Ongoing
5.4.4. Integrate a consideration of future climate change risk into all aspects of site management.	5.5.7. Support the Thames Landscape Strategy in its initiative to protect and restore the community and ecosystem services provided by the Thames landscape.	TLS RBGK LBoRuT	Ongoing
	5.5.8. Investigate the potential to undertake a Climate Change Vulnerability Assessment for the site and contribute to the third cycle of government Climate Change Adaptation Reporting.	E&CD	5 years
Science Collections			
6.4.1. Curate Kew's collections to excellent standards, ensuring we are responsible stewards for these invaluable assets.	6.5.1. Support the design and development of a new Science Quarter with world-class physical and digital infrastructure for all the Science Collections.	Science E&CD HE LBoRuT	5 years
	6.5.2. Adopt the UK Museum Accreditation Scheme standards for the Herbarium, Fungarium, Economic Botany and Art collections, by 2020–2021.	Science	2 years
	6.5.3. Publish the Library Art & Archives 10-year strategy by mid-2020.	Science	1 year
	6.5.4. Develop a fully costed action plan to address the Library, Art & Archives collections preservation backlog.	Science	1 year
6.4.2. Continue to develop Kew's collections, ensuring they remain of contemporary relevance.	6.5.5. Complete an audit of the Science Collections – to include an understanding of their age, quality of specimens and geographical scope. Generic level audit across collections by 2020, species level by 2028 following digitisation of the Herbarium and Fungarium.	Science	10 years
6.4.3. Open up access to the collections, ensuring they are widely used for active scientific purposes that benefit humankind.	6.5.6. Implement an Integrated Collections Management System (ICMS) to access collection information digitally by 2020–2021.	Science IT	2 years
	6.5.7. Continue the systematic cataloguing of the Archives and using the Integrated Collections Management System (ICMS), begin to address the Art collection cataloguing backlogs.	Science	Ongoing

Aims	Actions	Lead department and key partners	Time frame
6.4.4. Digitise the collections, making the data they hold freely accessible as Open Data, providing an invaluable resource for scientists and innovators.	6.5.8. Continue the digitisation of Kew's Science Collections, targeting to digitise all collections by 2028.	Science	10 years
Living Collections			
7.4.1. Develop and maintain diverse living plant collections in support of current and future scientific and horticultural research programmes.	7.5.1. Maintain the highest level of horticultural care and curation of the Living Collections and their associated data, completing an audit of the Living Collections by 2022. 7.5.2. Develop individual plans to guide the development of each living plant collection by 2023. 7.5.3. Ensure the collections are protected from disease and contamination by maintaining strict biosecurity procedures and compliance with all applicable national and international laws and conventions on plant collection and movement. 7.5.4. Ensure existing growing facilities are well maintained and build new facilities to meet the future requirements of the collections. 7.5.5. Develop an improved record management system, with potential for integration with RBG Kew's scientific collection database by 2021.	HLO HLO HLO E&CD HLO IT Science	Ongoing 3 years Ongoing Ongoing 2 years
7.4.2. Support plant conservation programmes through ex-situ propagation and cultivation of threatened taxa and by providing sources of genetic material for future conservation programmes.	7.5.6. Develop the collections in line with the Living Collections Strategy criteria, targeting data-rich accessions from wild sources, increasing the percentage of IUCN Red-Listed taxa and accessions that align with Kew's Science Collections Strategy.	HLO	Ongoing
7.4.3. Further enhance the important living heritage and contemporary aspects of the landscape at Kew Gardens.	7.5.7. Develop and enhance collections for identified priority landscapes at Kew and ensure continued preservation of heritage specimens. 7.5.8. Develop a publicly accessible mapping function for Kew's trees and plant collections, with attached collection data, including information on specimens of historic significance, by 2022.	HLO HLO	Ongoing 3 years
7.4.4. Maintain habitat diversity and quality within <i>in-situ</i> conservation areas at Kew Gardens.	7.5.9. Continue to conserve the integrity of the Natural Area and acid grasslands, protecting the species assemblages present and encouraging native species diversity.	HLO	Ongoing
Buildings and structures of significance			
8.4.1. Conserve the significance of the Kew Gardens historic environment and architectural heritage.	8.5.1. Progress the Palm House restoration proposal to a point of readiness for fundraising by 2021.	E&CD	1 year
	8.5.2. Undertake a condition survey of all historic artefacts and follies in 2020.	E&CD	6 months
8.4.2 Develop a long-term heritage strategy for Kew Gardens buildings and artefacts.	8.5.3. Develop and implement a Heritage Strategy for the site by 2022.	E&CD HE	2 years
	8.5.4. Investigate the opportunity for establishing a Heritage Partnership Agreement with Historic England and the Local Planning Authority in 2022.	E&CD HE LBoRuT	2 years

Aims	Actions	Lead department and key partners	Time frame
8.4.3. Provide an excellent facilities management services for the World Heritage Site.	8.5.5. Launch in-house facilities management services and a planned preventative maintenance system by 2020.	E&CD	6 months
	8.5.6. Develop and implement a prioritised 10-year forward maintenance programme for Kew Gardens (2020–2030).	E&CD	5 years
8.4.4. Bring the Kew estate to a state of statutory compliance and B, ‘good’, condition where only routine maintenance is required.	8.5.7. Achieve state of statutory compliance by 2021.	E&CD	1 year
8.4.5. Achieve excellence in asset and data management in order to improve our management of historic environment.	8.5.8. Review existing building stock and workspace to inform a 10-year development plan and workspace strategy in 2021.	E&CD	2 years
Landscape design and management			
9.4.1. Maintain and enhance the horticultural quality of the Kew site as an internationally renowned botanic garden and World Heritage Site.	9.5.1. Maintain the landscape management zones across the site, ensuring that horticultural maintenance standards are consistently high and appropriate for the specific zone.	HLO	Ongoing
	9.5.2. Enhance the landscape through the development of major new horticultural developments on site, to be implemented in a sensitive and strategic manner.	HLO	Ongoing
9.4.2. Ensure that the landscape is managed in a sustainable manner, securing the long-term viability of the site.	9.5.3. Implement a sustainable strategy for irrigation by installing and maintaining efficient irrigation systems, increasing rainwater harvesting, planning response to extreme droughts, and considering the potential for grey water recycling.	E&CD HLO	Long term
	9.5.4. Improve the bins and recycling facilities and aim for zero single-use plastics, minimising environmental impact as much as is possible.	HLO	Ongoing
9.4.4. Protect and enhance the important heritage of the landscape at Kew including its underlying structure and form.	9.5.5. Conserve the historic landscape framework of the Gardens, continuing the long-term planting and pruning programme on key avenues and vistas including Pagoda Vista, Cedar Vista and Syon Vista.	HLO	Ongoing
	9.5.6. Develop and enhance historic planted landscape features through the reference to past landscapes and the existing historic environment.	HLO	Ongoing
	9.5.7. Develop a long-term strategy to strengthen and manage screening around the boundary of the site, with special consideration of the North Eastern Zone and Riverside zones of the Gardens.	HLO	Long term
	9.5.8. Protect the identified location of archaeological deposits <i>in-situ</i> , and when necessary by investigation and recording.	E&CD HE	Ongoing
	9.5.9. Work with the Thames Landscape Strategy to raise awareness of the contribution RBG Kew WHS and the Old Deer Park makes to the wider Arcadian Thames landscape.	E&CD TLS	Ongoing
9.4.5. Manage Kew's heritage tree collections, champion trees and key landmark trees for their health and long-term viability.	9.5.10. Continue amelioration work for all current and future heritage trees.	HLO	Ongoing

Aims	Actions	Lead department and key partners	Time frame
Visitor engagement and experience			
10.4.1. Expand visitors' understanding of the diverse world of plants through the provision of engaging and authoritative interpretative information linked to the living plant collections, including compelling stories about Kew's global and local activities and impact.	10.5.1. Implement Interpretation Masterplan over 2019 to 2025. 10.5.2. Work with HRP to provide new visitor interpretation on Kew Gardens' Georgian period, landscape history and archaeological remains through a Georgian Kew Gardens trail and precinct map for the Palace complex.	HLO HRP	5 years
10.4.2. Embed Kew's core message and designation as a WHS at key points in the visitor experience.	10.5.3. Deliver Kew's Wayfinding Project by 2021.	HLO E&CD MCE	1 year
10.4.3. Increase RBG Kew's visitor and membership numbers in a sustainable manner through the delivery of innovative and engaging visitor programmes and events, which raise awareness of the work of RBG Kew and the WHS.	10.5.4. Maintain Christmas at Kew and Kew the Music at current levels of popularity, alongside the development of a programme of smaller events. 10.5.5. Deliver a rich public programme of events, exhibitions and festivals which will drive visitor numbers and enable us to communicate RBG Kew's mission and values to broader audience.	MCE E&CD HLO LBoRuT MCE E&CD HLO LBoRuT	Ongoing Ongoing
10.4.4. Enhance the visitor experience by delivering high quality visitor facilities and services.	10.5.6. Design and deliver new ticketing facilities at Brentford, Elizabeth and Lion entrance gates by 2022. 10.5.7. Improve the quality and capacity of the toilet facilities across the site. 10.5.8. Replace the White Peaks restaurant. 10.5.9. Develop the Victoria Gate redesign proposal. 10.5.10. Work with local government and communities to develop a strategic Travel and Event Plan for the Kew area by 2021.	E&CD HLO MCE LBoRuT HE E&CD E&CD HLO MCE LBoRuT HE MCE E&CD HLO	2 years 5 years 3 years Ongoing 1 year

Aims	Actions	Lead department and key partners	Time frame
10.4.5. Provide first class inspirational learning experiences for all.	10.5.11. Implement priority actions from the Schools Learning Strategy between 2019–2025. 10.5.12. Prepare a specification for a new learning centre at Kew to include a laboratory and growing area that reflects and links to the work Kew. 10.5.13. Develop Kew's Community Membership Scheme and deliver the Discovery and Access Programme to provide monthly British Sign Language tours, health walks, dementia friendly tours and autism tours; develop access bags to enhance visitors' experience.	HLO HLO E&CD HLO	5 years 1 year Ongoing
Scientific endeavour			
11.4.1. Document and conduct research into global plant and fungal diversity and its uses for humanity. 11.4.2. Curate and provide data-rich evidence from Kew's unrivalled collections as a global asset for scientific research. 11.4.3. Disseminate our scientific knowledge of plants and fungi, maximising its impact in science, education, conservation policy and management.	11.5.1. To undertake a lesson learnt assessment and consultation on the success of the strategic outputs from Science Strategy 2015–2020. 11.5.2. Develop and publish a new Science Strategy for 2021–2025.	Science	1 year
11.4.4. Develop the facilities and resources needed to support Kew's role as a world class centre for scientific research and biodiversity conservation.	11.5.3. Support the design and development of a new Science Quarter with world-class facilities for research and opportunity for public engagement. 11.5.4. Increase quality applications for grant funding and high-impact academic publications.	Science E&CD Science Foundation	5 years Ongoing
Managing development within the WHS			
12.4.1. Buildings which contribute to the OUV of the WHS, or are of historic significance in their own right, will be maintained and used.	12.5.1. Publish and implement a 10-to 15-year Development Plan. 12.5.2. Development and implementation of a Residential Buildings Strategy in 2020 for Kew's residential properties, which secures best value for public money and adequate legal protections for safeguarding the OUV of the WHS.	E&CD LBoRuT HE E&CD Resources LBoRuT HE	1 year 1 year
12.4.2. Address all low quality buildings that do not contribute to the OUV of the WHS through the development programme.	12.5.3. Review existing building stock to identify buildings for redevelopment, removal or replacement (buildings that no longer serve a clear function and do not contribute to the OUV of the WHS).	E&CD LBoRuT HE	Ongoing

Aims	Actions	Lead department and key partners	Time frame
12.4.3. New development will enhance and safeguard the character and appearance of the WHS including views into and out of the WHS and the setting of key buildings within the WHS.	12.5.4. All new development proposals will be subject to a Heritage Impact Assessment, in accordance with ICOMOS Guidance (2011), in addition to any requirements for planning permission.	E&CD LBoRuT HE	Ongoing
	12.5.5. Establish design guidance and briefs for proposed strategic developments, taking into account potential impacts on the OUV of the WHS and significance of other assets.	E&CD LBoRuT HE	Ongoing
	12.5.6. Develop guidelines for temporary structures and events at Kew Gardens.	E&CD LBoRuT HE	1 year
12.4.4. New development will seek to achieve high standards of sustainability and will use materials that reflect and respond to the character and appearance of the WHS.	12.5.7. Deliver the following developments to address identified issues and requirements: <ul style="list-style-type: none">• Progress the Science Quarter Project.• Open the new Family Restaurant by 2021.• Complete the Arboretum HQ by 2021.• Replacement of the ticketing facilities at Brentford Gate, Elizabeth Gate and Lion Gate.	E&CD LBoRuT HE GLA	5 years
12.4.5. New development will be designed and specified in consultation with the relevant local, national and international decision-makers and stakeholders, as required.	<ul style="list-style-type: none">• Replace the White Peaks restaurant by 2022.• Replacement of old nursery facilities as propagation and decant facilities in preparation for Palm House restoration project.	E&CD LBoRuT HE GLA	Ongoing
Managing development in the setting of the WHS			
13.4.1. Work with external partners to avoid further harm to the OUV of the WHS from unsympathetic development within the WHS buffer zone and wider setting. To be achieved through the Steering Group and by engaging in Local Planning Authority planning consultations.	13.5.1. Work with external partners to ensure that strategic development proposals and plans for land within the LBH and LBRuT safeguard the OUV of the WHS from unsympathetic development within its buffer zone and wider setting. To be achieved via Steering Group discussion and by engaging in Local Plan consultations (2019-25).	RBGK LBoH LBoRuT GLA HE	Ongoing
	13.5.2. Work with external partners to ensure that conservation of the OUV of the WHS is given great weight when considering the impact of development proposals on the setting and OUV of the WHS, with particular consideration of the potential cumulative impacts of new developments with existing development and other proposed schemes. To be achieved via Steering Group discussion and by engaging in Local Planning Authority consultations (2019-25).	RBGK LBoH LBoRuT GLA HE	Ongoing
13.4.2. Promote awareness of the OUV of the WHS as a material consideration in planning decisions. To be achieved through working with external partners and ensuring links to the WHSMP are provided on Local Planning Authority planning webpages.	13.5.3. Ensure the continued monitoring and review of all planning applications that may affect the OUV of the WHS and key buildings within it to determine where OUV, WHS policies and WHS Management Plan should influence decision-making (2019-25).	RBGK LBoH LBoRuT HE GLA	Ongoing
	13.5.4. Ensure the promotion and visibility of the WHS Management Plan as a material consideration in the assessment of development proposals by making the Plan accessible on RBG Kew's webpages and the Planning webpages of LBH and LBRuT.	RBGK LBoH LBoRuT	Ongoing

Aims	Actions	Lead department and key partners	Time frame
13.4.3. Seek to reduce the scale of existing harm to the OUV of the WHS from unsympathetic buildings within the WHS buffer zone and wider setting when and where possible.	13.5.5. Work with external partners to explore long-term opportunities to reduce the scale of existing harm through managed replacement of existing harmful development (2019–25).	RBGK LBoH LBoRuT GLA HE	Ongoing
	13.5.6. Work with external partners to explore the potential use of 3D computer modelling software to better assess cumulative impact of development proposals and enable views analysis (2019–25).	RBGK LBoH LBoRuT GLA HE	1 year
13.4.4. Maintain the setting of the WHS through appropriate management of planting, and vistas within the WHS.	13.5.7. Review the existing buffer zone with external stakeholders to determine effectiveness and identify the need for any changes to its extent (2020–21).	RBGK LBoH LBoRuT GLA HE	1 year
	13.5.8. Work with the Thames Landscape Strategy to implement key elements of the Thames Landscape Strategy to improve the quality of the riverside environment (2019–25).	RBGK TLS LBoH LBoRuT	Ongoing
	13.5.9. Maintain and strengthen boundary tree belts and other screening features to safeguard setting of the WHS (2019–25).	HLO LBoRuT	Long term
	13.5.10. Maintain and strengthen boundary tree belts and other screening features to safeguard setting of the WHS (2019–25). 13.5.10. Maintain and improve internal vistas, key walks, the riverside environment and the environs of key buildings to safeguard setting of WHS through the implementation of new designs (where appropriate), ongoing management and, if appropriate, new planting (2019–25).	HLO E&CD	Ongoing



Agius Evolution Garden

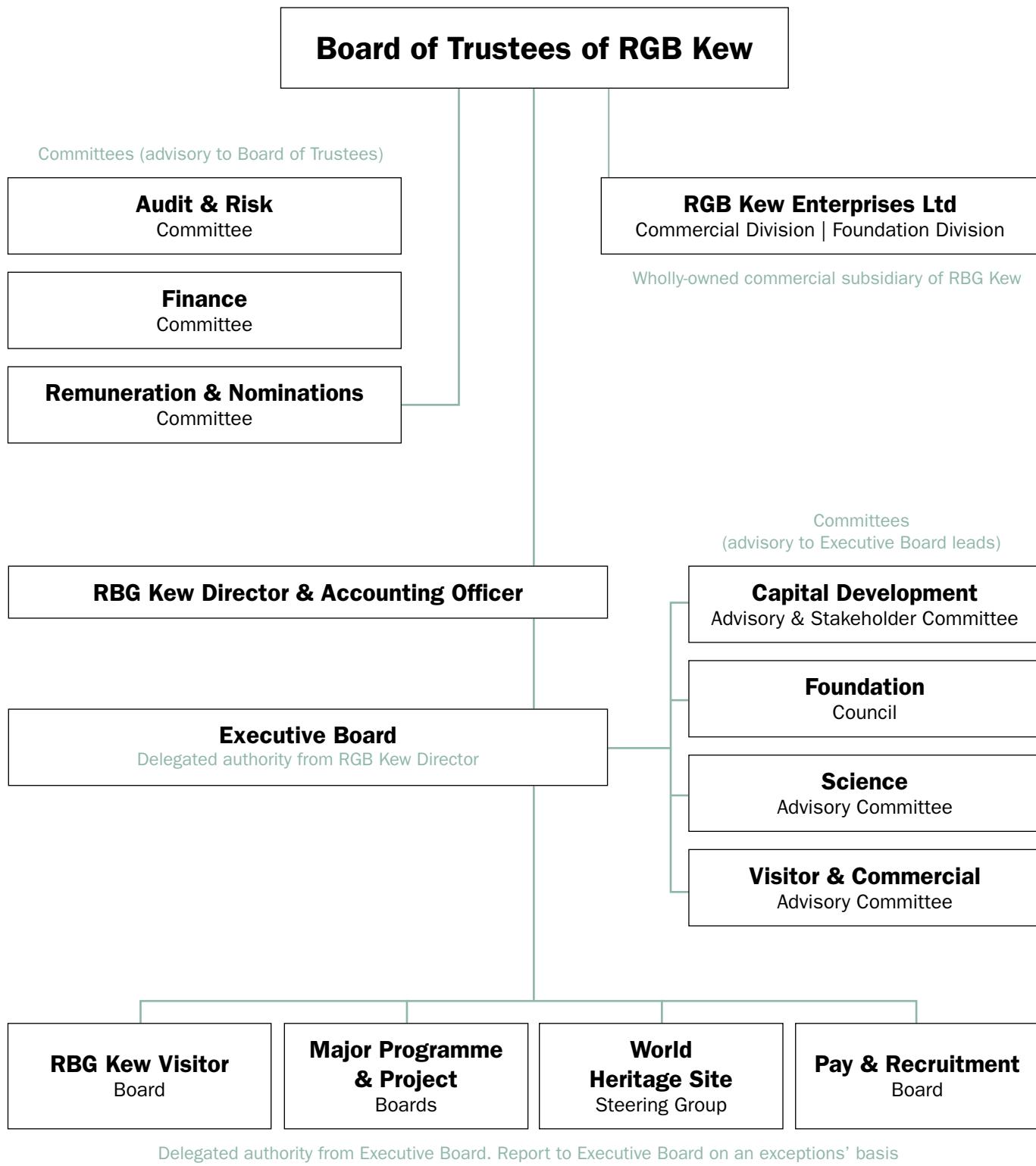


Sculpture at Kew

IV. Appendices

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A. RBG Kew Governance Map



B. Legislation and policy context

The following provides further detail on key elements of legislation, policy and guidance that are relevant to the management of the WHS, including:

- UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)
- Operational Guidelines for the Implementation of the World Heritage Convention, UNESCO (July 2019)
- Venice Charter (1964)
- Planning (listed buildings and conservation areas) Act 1990 (as amended)
- Ancient Monuments and Archaeological Areas Act 1979
- National Planning Policy Framework (2019)
- National Planning Practice Guidance (online resource – re-issued July 2019)
- London Plan (2017 – consolidated with alterations since 2011)
- Draft London Plan (draft new London Plan, in particular policy HC2 World Heritage Sites)
- Hounslow plan (2015–2030)
- Richmond Local Plan (2018)
- London's World Heritage Sites – Guidance on Settings, SPG (2012)
- Mayor of London's All London Green Grid Supplementary Planning Guidance
- Historic England, The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning Note 3 (Second Edition – Dec. 2017)
- The Thames Landscape Strategy Hampton to Kew (1994 and 2012)

B1. UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)

The inscription of the Royal Botanic Gardens, Kew as a World Heritage Site in 2003 places international obligations on the UK Government under the terms of the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) and its supporting Operational Guidelines.

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) (henceforth known as ‘the Convention’) was ratified by the United Kingdom in 1984. Ratification places certain obligations on the UK Government including:

Article 4

Each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation,

presentation and transmission to future generations of the cultural and natural heritage referred to in Articles 1 and 2 and situated on its territory, belongs primarily to that State. It will do all it can to this end, to the utmost of its own resources and, where appropriate, with any international assistance and cooperation, in particular, financial, artistic, scientific and technical, which it may be able to obtain.

Article 5

To ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage situated on its territory, each State Party to this Convention shall endeavour, in so far as possible, and as appropriate for each country:

- (a) to adopt a general policy which aims to give the cultural and natural heritage a function in the life of the community and to integrate the protection of that heritage into comprehensive planning programmes;
- (b) to set up within its territories, where such services do not exist, one or more services for the protection, conservation and presentation of the cultural and natural heritage with an appropriate staff and possessing the means to discharge their functions;
- (c) to develop scientific and technical studies and research and to work out such operating methods as will make the State capable of counteracting the dangers that threaten its cultural or natural heritage;
- (d) to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage; and
- (e) to foster the establishment or development of national or regional centres for training in the protection, conservation and presentation of the cultural and natural heritage and to encourage scientific research in this field.

Article 6

- 1 Whilst fully respecting the sovereignty of the States on whose territory the cultural and natural heritage mentioned in Articles 1 and 2 is situated, and without prejudice to property right provided by national legislation, the States Parties to this Convention recognize that such heritage constitutes a world heritage for whose protection it is the duty of the international community as a whole to co-operate.
- 2 The States Parties undertake, in accordance with the provisions of this Convention, to give their help in the identification, protection, conservation and presentation of the cultural and natural heritage referred to in paragraphs 2 and 4 of Article 11 if the States on whose territory it is situated so request.
- 3 Each State Party to this Convention undertakes not to take any deliberate measures which might damage

- 4 directly or indirectly the cultural and natural heritage referred to in Articles 1 and 2 situated on the territory of other States Parties to this Convention.

The UK Government meets these obligations through the relevant national planning systems in England, Scotland, Wales and Northern Ireland; and the funding of heritage services and research in the individual nations of the UK.

The convention also established an Intergovernmental Committee for the Protection of the Cultural and Natural Heritage of Outstanding Universal Value, called ‘the World Heritage Committee’ (see Article 8). This committee is responsible for the establishment and management of a list of places that are considered to be of outstanding universal value, called the World Heritage List. The committee also maintains the ‘World Heritage in Danger’ list, this, as the name implies, identifies World Heritage Sites that are facing significant threats to their outstanding universal value. The Committee also has the power to de-list a World Heritage Site should it determine that its Outstanding Universal Value has been degraded to a sufficient degree.

The Committee is supported by the World Heritage Centre, an executive body housed at UNESCO’s headquarters in Paris. The Committee and Centre are advised by the International Centre for the Study of the Preservation and the Restoration of Cultural Property (the Rome Centre), the International Council of Monuments and Sites (ICOMOS) and the International Union for Conservation of Nature and Natural Resources (IUCN).

B2. Operational Guidelines for the Implementation of the World Heritage Convention, UNESCO (July 2017)

These guidelines support the implementation of the Convention by UNESCO and signatory state parties. The guidelines are periodically revised to reflect the decisions of the World Heritage Committee; the latest version (as of June 2019) is dated July 2017.

The Operational Guidelines set out the procedures for:

- ‘the inscription of properties on the World Heritage List and the List of World Heritage in Danger;
- the protection and conservation of World Heritage properties;
- the granting of International Assistance under the World Heritage Fund; and
- the mobilization of national and international support in favor of the Convention.’ (Paragraph 1)

In terms of broad principles paragraph 4 states that: ‘The cultural and natural heritage is among the priceless and irreplaceable assets, not only of each nation, but of humanity as a whole. The loss, through deterioration or disappearance, of any of these most prized assets constitutes an impoverishment of the heritage of all the peoples of the

world. Parts of that heritage, because of their exceptional qualities, can be considered to be of ‘Outstanding Universal Value’ and as such worthy of special protection against the dangers which increasingly threaten them.’

The Operational Guidelines go on to indicate in Paragraphs 6 and 7 that:

‘6. Since the adoption of the Convention in 1972, the international community has embraced the concept of ‘sustainable development’. The protection and conservation of the natural and cultural heritage are a significant contribution to sustainable development.

7. The Convention aims at the identification, protection, conservation, presentation and transmission to future generations of cultural and natural heritage of Outstanding Universal Value.’

Paragraph 8 highlights the process for addressing world heritage sites (called properties in the Operational Guidelines) that are considered to be under threat: ‘When a property inscribed on the World Heritage List is threatened by serious and specific dangers, the Committee considers placing it on the List of World Heritage in Danger. When the Outstanding Universal Value of the property which justified its inscription on the World Heritage List is destroyed, the Committee considers deleting the property from the World Heritage List.’ There are currently 54 properties (out of 1,073 World Heritage properties in total) on the In-Danger list. To date two properties have been de-listed: the Dresden Elbe Valley, Germany (delisted 2009) and Arabian Oryx Sanctuary, Oman (delisted 2007).

Paragraph 49 helpfully defines Outstanding Universal Value: ‘Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole.’

Paragraph 52 reinforces the special attention that World Heritage properties deserve, stating that ‘The Convention is not intended to ensure the protection of all properties of great interest, importance or value, but only for a select list of the most outstanding of these from an international viewpoint. It is not to be assumed that a property of national and/or regional importance will automatically be inscribed on the World Heritage List.’

Section II.F – Protection and management (Paragraphs 96 to 119 inc.) provides important guidance on how UNESCO expects state parties to protect World Heritage Properties.

Paragraph 96 reminds State Parties that ‘Protection and management of World Heritage properties should ensure that their Outstanding Universal Value, including the conditions of integrity and/or authenticity at the time of inscription, are sustained or enhanced over time.’

Paragraph 98 goes on to state that ‘Legislative and regulatory measures at national and local levels should assure the protection of the property from social, economic

and other pressures or changes that might negatively impact the Outstanding Universal Value, including the integrity and/or authenticity of the property. States Parties should also assure the full and effective implementation of such measures.' The ultimate responsibility for the safeguarding of Royal Botanic Gardens, Kew WHS's Outstanding Universal Value therefore lies with the UK Government.

Paragraphs 103 to 107 provide guidance on the definition of buffer zones around World Heritage Properties. Paragraphs 103 and 104 state that:

'103. Wherever necessary for the proper protection of the property, an adequate buffer zone should be provided.

104. For the purposes of effective protection of the nominated property, a buffer zone is an area surrounding the nominated property which has complementary legal and/or customary restrictions placed on its use and development to give an added layer of protection to the property. This should include the immediate setting of the nominated property, important views and other areas or attributes that are functionally important as a support to the property and its protection. The area constituting the buffer zone should be determined in each case through appropriate mechanisms...'

Paragraphs 108 to 118 provide guidance on Management Systems. Paragraphs 108 and 109 state that:

'108. Each nominated property should have an appropriate management plan or other documented management system which must specify how the Outstanding Universal Value of a property should be preserved, preferably through participatory means.

109. The purpose of a management system is to ensure the effective protection of the nominated property for present and future generations.'

Paragraph 112 provides guidance on effective management within and outside an inscribed property, stating that:

'112. Effective management involves a cycle of short, medium and long-term actions to protect, conserve and present the nominated property. An integrated approach to planning and management is essential to guide the evolution of properties over time and to ensure maintenance of all aspects of their Outstanding Universal Value. This approach goes beyond the property to include any buffer zone(s), as well as the broader setting. The broader setting, may relate to the property's topography, natural and built environment, and other elements such as infrastructure, land use patterns, spatial organization, and visual relationships. It may also include related social and cultural practices, economic processes and other intangible dimensions of heritage such as perceptions and associations. Management of the broader setting is related to its role in supporting the Outstanding Universal Value.'

This paragraph clearly indicates that the effective management of a World Heritage property requires the management of change in its broader setting, including outside of any buffer zone.

B3. Venice Charter (1964)

The Venice Charter for the Conservation and Restoration of Monuments and Sites is a set of guidelines drawn up over 55 years ago to provide a framework for the conservation and restoration of historic buildings. While conservation practice and theory in the built environment continues to evolve, the Charter is still of some relevance and reflects part of the UK's international obligations. Key articles include:

'ARTICLE 1. The concept of an historic monument embraces not only the single architectural work but also the urban or rural setting.

ARTICLE 6. The conservation of a monument implies preserving a setting which is not out of scale. Wherever the traditional setting exists, it must be kept.

ARTICLE 7. A monument is inseparable from the history to which it bears witness and from the setting in which it occurs.

ARTICLE 14. The sites of monuments must be the object of special care in order to safeguard their integrity and ensure that they are cleared and presented in a seemly manner (especially relevant given the link made between setting and integrity in the statement of OUV).'

B4. Planning (listed buildings and conservation areas) Act 1990 (as amended)

The Act provides the legal basis for granting of planning permission for change that could affect listed buildings and/or conservation areas. It sets out controls for the demolition, alteration or extension of buildings or structures of special architectural or historic interest, as well as conservation areas. It also provides controls on change in the setting of listed buildings.

In relation to the setting of listed buildings, Section 66 of the Act states that 'In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses'.

In terms of conservation areas the Act states in Section 72 that 'In the exercise, with respect to any buildings or other land in a conservation area, of any functions under or by virtue of any of the provisions mentioned in subsection (2), special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area'.

B5. Ancient Monuments and Archaeological Areas Act 1979

The Ancient Monuments and Archaeological Areas Act 1979 (AMAAA) provides the legislative framework for the protection of ancient monuments. All such monuments are considered to be of national importance.

Section 61 (7) defines a monument as:

'any building, structure or work, whether above or below the surface of the land, and any cave or excavation;

any site comprising the remains of any such building, structure or work or of any cave or excavation; and

any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof which neither constitutes nor forms part of any work which is a monument within paragraph (a) above'.

Under the terms of the Act it is an offence to undertake works that would result in the demolition of, destruction of, or any damage to a scheduled monument; or to undertake works for the purpose of removing or repairing a scheduled monument or any part of it or of making any alterations or additions to a scheduled monument; or to undertake flooding or tipping operations on land in, on or under which there is a scheduled monument; unless scheduled monument consent has been granted. The Act makes no legal provision in relation to the setting of scheduled monuments.

B6. National Planning Policy Framework (2019) (the NPPF)

The 2018 National Planning Policy Framework (NPPF) outlines the government's planning policies for England with regard to the consideration of heritage assets in the planning process. It is supported by National Planning Practice Guidance (NPPG) (see below). Chapter 16 of the NPPF, 'Conserving and Enhancing the Historic Environment', is of particular relevance to the conservation and protection of the OUV of the WHS.

The chapter provides clear direction for planning authorities on the determination of applications affecting designated and non-designated heritage assets. Paragraph 193 recognises that World Heritage Sites are of the highest significance along with Grade I and Grade II* listed buildings and scheduled monuments; and as set out in paragraph 193 very great weight must therefore be given to the conservation of their significance (OUV) and their setting.

'When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance'. (NPPF paragraph 193)

Paragraphs 194–196 provide key policy tests for developments that would harm the significance of designated assets (including listed buildings, conservation areas and World Heritage Sites). These clearly indicate that change in the setting of an asset can be harmful to its significance and as set out in the NPPF definition of setting, our ability to appreciate that significance. Paragraph 194 states that 'Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification.' This test applies before consideration of the scale of harm.

Paragraph 195 indicates that 'Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm...'. Paragraph 196 indicates that 'Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.'

Paragraph 197 provides guidance on non-designated assets: 'The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.'

B7. National Planning Practice Guidance (online resource – 2019) (the NPPG)

The NPPG contains guidance to support the implementation of the NPPF. Relevant guidance can be found in the 'Conserving and enhancing the historic environment' and 'Design' sections of the NPPG.

Conserving and enhancing the historic environment

Paragraph 001 reminds us that 'Protecting and enhancing the historic environment is an important component of the National Planning Policy Framework's drive to achieve sustainable development... The appropriate conservation of heritage assets forms one of the 'Core Planning Principles' (paragraph 17 bullet 10 [of the NPPF]) that underpin the planning system...' (Paragraph: 001 Reference ID: 18a-001-20140306)

Paragraph 3 indicates that 'The conservation of heritage assets in a manner appropriate to their significance is a core planning principle. Heritage assets are an irreplaceable resource and effective conservation delivers wider social, cultural, economic and environmental benefits' and that 'Where changes are proposed, the National Planning Policy Framework sets out a clear framework for both plan-making

and decision-taking to ensure that heritage assets are conserved, and where appropriate enhanced, in a manner that is consistent with their significance and thereby achieving sustainable development.' (Paragraph: 003 Reference ID: 18a-003-20140306).

Paragraph 13 (Reference ID: 18a-013-20140306) provides further information on setting of heritage assets, stating that:

'Setting is the surroundings in which an asset is experienced, and may therefore be more extensive than its curtilage. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not.'

The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places. For example, buildings that are in close proximity but are not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each.

The contribution that setting makes to the significance of the heritage asset does not depend on there being public rights or an ability to access or experience that setting. This will vary over time and according to circumstance.'

It goes on to state that 'When assessing any application for development which may affect the setting of a heritage asset, local planning authorities may need to consider the implications of cumulative change. They may also need to consider the fact that developments which materially detract from the asset's significance may also damage its economic viability now, or in the future, thereby threatening its ongoing conservation' [Paragraph: 013 Reference ID: 18a-013-20140306].

Paragraph 17 provides information on how to assess if a proposal would cause substantial harm, stating that:

'What matters in assessing if a proposal causes substantial harm is the impact on the significance of the heritage asset. As the National Planning Policy Framework makes clear, significance derives not only from a heritage asset's physical presence, but also from its setting.'

Whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the policy in the National Planning Policy Framework. In general terms, substantial harm is a high test, so it may not arise in many cases. For example, in determining whether works to a listed building constitute substantial harm, an important consideration would be whether the adverse impact seriously affects a key element of its special architectural or historic interest. It is the degree of harm to the asset's significance rather than the scale of the development that is to be assessed. The harm may arise from works to the asset or from development within its setting.

While the impact of total destruction is obvious, partial destruction is likely to have a considerable impact but, depending on the circumstances, it may still be less than substantial harm or conceivably not harmful at all, for example, when removing later inappropriate additions to historic buildings which harm their significance. Similarly, works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all. However, even minor works have the potential to cause substantial harm.'

It is important to note a number of aspects from this guidance. Firstly, that change to an asset's setting can result in substantial harm to its significance. Secondly, substantial harm is a high test and may not be a common occurrence. The majority of proposals for development therefore will probably not result in substantial harm. Thirdly, the harm test relates to an asset's significance not its setting. It is therefore important that decisions are based on adequate and proportionate material that defines significance and the contribution that setting makes to it. Fourthly, smaller scale works to an asset or small/localised changes to its setting can result in substantial harm but realistically this is likely to be a rare situation and is far more likely to occur when physical change is involved.

Finally, it is noted that the NPPG does not define what constitutes substantial harm and is clear that determining 'Whether a proposal causes substantial harm will be a judgment for the decision taker...'

Paragraphs 26 to 36 provide guidance on World Heritage Sites in England. Paragraph 28 reminds us that 'The United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Committee inscribes World Heritage Properties onto its World Heritage List for their Outstanding Universal Value – cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. World Heritage Properties are referred to in the National Planning Policy Framework and in this guidance as 'World Heritage Sites' and are defined as designated heritage assets in the National Planning Policy Framework.' (Paragraph: 028 Reference ID: 18a-028-20140306).

Paragraph 26 sets out how World Heritage Sites are protected and managed in England. It indicates that 'England protects its World Heritage Sites and their settings, including any buffer zones or equivalent, through the statutory designation process and through the planning system. The Outstanding Universal Value of a World Heritage Site, set out in a Statement of Outstanding Universal Value, indicates its importance as a heritage asset of the highest significance to be taken into account by:

- the relevant authorities in plan-making, determining planning and related consents (including listed building consent, development consent and Transport and Works Act Orders)
- and by the Secretary of State in determining such cases on appeal or following call-in

Effective management of World Heritage Sites involves the identification and promotion of positive change that will conserve and enhance their Outstanding Universal Value, authenticity, integrity and with the modification or mitigation of changes which have a negative impact on those values.' (Paragraph: 026 Reference ID: 18a-026-20140306)

Paragraph 29 highlights the role and importance of Statements of Outstanding Universal Value. 'A Statement of Outstanding Universal Value is agreed and adopted by the World Heritage Committee for each Site on inscription. The Statement sets out what the World Heritage Committee considers to be of Outstanding Universal Value about the Site in relation to the World Heritage Convention and includes statements of integrity and, in relation to cultural sites or the cultural aspects of 'mixed' Sites, authenticity, and the requirements for protection and management. Statements of Outstanding Universal Value are key reference documents for the protection and management of each Site and can only be amended or altered by the World Heritage Committee.' (Paragraph: 029 Reference ID: 18a-029-20140306)

Paragraph 31 clarifies how the terminology used by UNESCO relates to that in the NPPF. 'World Heritage Sites are inscribed for their 'Outstanding Universal Value' and each World Heritage Site has defined its 'attributes and components' the tangible remains, visual and cultural links that embody that value. The cultural heritage within the description of the Outstanding Universal Value will be part of the World Heritage Site's heritage significance and National Planning Policy Framework policies will apply to the Outstanding Universal Value as they do to any other heritage significance they hold. As the National Planning Policy Framework makes clear, the significance of the designated heritage asset derives not only from its physical presence, but also from its setting.' (Paragraph: 031 Reference ID: 18a-031-20140306)

Paragraph 32 sets out important principles for the conservation of World Heritage Sites in terms of plan making and decision making. It indicates that '...policy frameworks at all levels should conserve the Outstanding Universal Value, integrity and authenticity (where relevant for cultural or 'mixed' sites) of each World Heritage Site and its setting, including any buffer zone or equivalent.' It reminds readers, again, that 'World Heritage Sites are designated heritage assets of the highest significance.'

In terms of plan making the guidance indicates that 'When developing Local Plan policies to protect and enhance World Heritage Sites and their Outstanding Universal Value, local planning authorities should aim to satisfy the following principles:

- protecting the World Heritage Site and its setting, including any buffer zone, from inappropriate development
- striking a balance between the needs of conservation, biodiversity, access, the interests of the local community, the public benefits of a development and the sustainable economic use of the World Heritage Site in its setting, including any buffer zone

- protecting a World Heritage Site from the effect of changes which are relatively minor but which, on a cumulative basis, could have a significant effect
- enhancing the World Heritage Site and its setting where appropriate and possible through positive management
- protecting the World Heritage Site from climate change but ensuring that mitigation and adaptation is not at the expense of integrity or authenticity'

These principles highlight the importance of the setting of WHSs and the need to manage cumulative change. Importantly the NPPG goes on to state that 'Planning authorities need to take these principles and the resultant policies into account when making decisions.' (Paragraph: 032 Reference ID: 2a-032-20140306).

The importance of the setting of a WHS is further emphasised in paragraph 33. This states that 'The UNESCO Operational Guidelines seek protection of 'the immediate setting' of each World Heritage Site, of 'important views and other areas or attributes that are functionally important as a support to the Property' and suggest designation of a buffer zone wherever this may be necessary. A buffer zone is defined as an area surrounding the World Heritage Site which has complementary legal restrictions placed on its use and development to give an added layer of protection to the World Heritage Site. The buffer zone forms part of the setting of the World Heritage Site.'

It is important to note that the guidance is clear that a buffer zone can form part of the setting of a WHS but does not necessarily encompass all of its setting. This would indicate that development outside of the buffer zone may affect the setting and OUV of a WHS.

The guidance also indicates that 'It may be appropriate to protect the setting of World Heritage Sites in other ways, for example by the protection of specific views and viewpoints. Other landscape designations may also prove effective in protecting the setting of a World Heritage Site. However it is intended to protect the setting, it will be essential to explain how this is to be done in the Local Plan.' (Paragraph: 033 Reference ID: 2a-033-20140306).

Paragraph 34 provides information on WHS Management Plans, indicating that 'Each World Heritage Site has a management plan which contains both long term and day to day actions to protect, conserve and present the Site...' and that 'Each plan should be attuned to the particular characteristics and needs of the site and incorporate sustainable development principles'.

The need to consider relevant policies in WHS Management Plans is also set out in paragraph 34: 'Given their importance in helping to sustain and enhance the significance of the World Heritage Site, relevant policies in management plans need to be taken into account by local planning authorities in developing their strategy for the historic or natural environment (as appropriate) and in determining relevant planning applications.' (Paragraph: 034 Reference ID: 18a-034-20140306).

In terms of assessing the impact of development on WHSs and their OUV, paragraph 35 provides guidance to applicants and authorities. It indicates that applicants ‘... need to submit sufficient information with their applications to enable assessment of impact on Outstanding Universal Value. This may include visual impact assessments, archaeological data or historical information. In many cases this will form part of an Environment Statement. Applicants may find it helpful to use the approach set out in the International Council on Monuments and Sites’s Heritage Impact Assessment guidelines and Historic England’s guidance on setting and views.’ (Paragraph: 035 Reference ID: 18a-035-20140306).

Paragraph 36 provides information on consultation requirements in relation to proposals that affect a WHS.

B8. London Plan (2017 – consolidated with alterations since 2011)

Key historic environment policies in the current London Plan include Policy 7.8 and 7.10. In relation to the setting of the WHS, Policy 7.7 relating to tall buildings is also relevant.

Policy 7.7 Tall Buildings

Section E of the policy states that ‘The impact of tall buildings proposed in sensitive locations should be given particular consideration. Such areas might include conservation areas, listed buildings and their settings, registered historic parks and gardens, scheduled monuments, battlefields, the edge of the Green Belt or Metropolitan Open Land, World Heritage Sites or other areas designated by boroughs as being sensitive or inappropriate for tall buildings.’

Policy 7.8 Heritage Assets and Archaeology

This provides general policy for designated and non-designated heritage assets in London. In terms of making planning decisions the Policy states that:

‘C Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.

D Development affecting heritage assets and their settings should conserve their significance, by being sympathetic to their form, scale, materials and architectural detail.

E New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be made available to the public on-site. Where the archaeological asset or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of that asset.’

This broadly reflects policy in the NPPF.

The supporting text highlights the importance and value of London’s rich architectural heritage and continuing urban evolution. Paragraph 7.29 states that ‘London’s built and landscape heritage provides a depth of character that has

immeasurable benefit to the city’s economy, culture and quality of life. Natural landscapes can help to provide a unique sense of place whilst layers of architectural history provide an environment that is of local, national and world heritage value. It is to London’s benefit that some of the best examples of architecture from the past 2000 years sit side by side to provide a rich texture that makes the city a delight to live, visit, study and do business in. Ensuring the identification and sensitive management of London’s heritage assets in tandem with promotion of the highest standards of modern architecture will be key to maintaining the blend of old and new that gives the capital its unique character.’

Paragraph 7.31 states that ‘Development that affects the setting of heritage assets should be of the highest quality of architecture and design, and respond positively to local context and character outlined in the policies above.’ This is in addition to the national policy tests relating to the need to balance the harm and benefit of proposals.

Paragraph 7.31A repeats the substantial harm and less than substantial harm tests set out in NPPF.

Policy 7.10 World Heritage Sites

Policy 7.10 provides important strategic and decision-making guidance in relation to London’s four internationally important WHSs.

‘Strategic

A Development in World Heritage Sites and their settings, including any buffer zones, should conserve, promote, make sustainable use of and enhance their authenticity, integrity and significance and Outstanding Universal Value. The Mayor has published Supplementary Planning Guidance on London’s World Heritage Sites – Guidance on Settings to help relevant stakeholders define the setting of World Heritage Sites.

Planning decisions

B Development should not cause adverse impacts on World Heritage Sites or their settings (including any buffer zone). In particular, it should not compromise a viewer’s ability to appreciate its Outstanding Universal Value, integrity, authenticity or significance. In considering planning applications, appropriate weight should be given to implementing the provisions of the World Heritage Site Management Plans.’

Paragraph 7.34 returns the point about integrating WHSs into the wider urban fabric; ‘The World Heritage Sites at Maritime Greenwich, Royal Botanic Gardens Kew, Palace of Westminster and Westminster Abbey including St Margaret’s Church and Tower of London are embedded in the constantly evolving urban fabric of London. The surrounding built environment must be carefully managed to find a balance between protecting the elements of the World Heritage Sites that make them of Outstanding Universal Value and allowing the surrounding land to continue to change and evolve as it has for centuries. To help this process, the Mayor will encourage the development and implementation of World Heritage Management Plans.’

Paragraph 7.36 states that ‘Development in the setting (including buffer zones where appropriate) of these World Heritage Sites should provide opportunities to enhance their setting through the highest quality architecture and contributions to the improvement of the public realm consistent with the principles of the World Heritage Site Management Plans. Development in the setting of World Heritage Sites must contribute to the provision of an overall amenity and ambience appropriate to their World Heritage status.’ This seeks to balance the need for new development with the need to retain the ambience and amenity of a WHS.

The paragraph also identifies the relevance of the SPG on WHSs stating that ‘The Mayor encourages developers, policy makers and other stakeholders to follow the stepped approach set out in his guidance on settings to assess the effects of development proposals and proposals for change through plan-making on the setting of the World Heritage Sites.’

B9. New Draft London Plan (Intention to Publish version 2019)

The Draft London Plan contains new policy regarding the management of change within and around World Heritage Sites:

Policy HC2 World Heritage Sites

A) Boroughs with World Heritage Sites and those that are neighbours to authorities with World Heritage Sites should include policies in their Development Plans that conserve, promote, actively protect and interpret the Outstanding Universal Value of World Heritage Sites, which includes the authenticity and integrity of their attributes and their management.

B) Development proposals in World Heritage Sites and their settings, including any buffer zones, should conserve, promote and enhance their Outstanding Universal Value, including the authenticity, integrity and significance of their attributes, and support their management and protection. In particular, they should not compromise the ability to appreciate their Outstanding Universal Value, or the authenticity and integrity of their attributes.

C) Development Proposals with the potential to affect World Heritage Sites or their settings should be supported by Heritage Impact Assessments. Where development proposals may contribute to a cumulative impact on a World Heritage Site or its setting, this should be clearly illustrated and assessed in the Heritage Impact Assessment.

D) Up-to-date World Heritage Site Management Plans should be used to inform the plan-making process, and when considering planning applications, appropriate weight should be given to implementing the provisions of the World Heritage Site Management Plan.

7.2.1 The UNESCO World Heritage Sites at Maritime Greenwich, Royal Botanic Gardens Kew, Palace of Westminster and Westminster Abbey including St Margaret’s Church, and

the Tower of London are among the most important cultural heritage sites in the World and are a key feature of London’s identity as a world city. In ratifying the World Heritage Convention, the UK Government has made a commitment to protecting, conserving, presenting and transmitting to future generations the Outstanding Universal Value of World Heritage Sites’ and to protecting and conserving their settings. Much of this commitment is discharged by local authorities, including the GLA, through their effective implementation of national, regional, and local planning policies for conserving and enhancing the historic environment.

7.2.2 The context of each of the four London World Heritage Sites is markedly different and the qualities of each is conditioned by the character and form of its surroundings as well as other cultural, intellectual, spatial or functional relationships. The surrounding built environment must be carefully managed to ensure that the attributes of the World Heritage Sites that make them of Outstanding Universal Value are protected and enhanced, while allowing the surrounding area to change and evolve as it has for centuries.

7.2.3 The setting of London’s World Heritage Sites consists of the surroundings in which they are experienced, and is recognised as fundamentally contributing to the appreciation of a World Heritage Site’s Outstanding Universal Value. As all four of London’s World Heritage Sites are located along the River Thames, the setting of these sites includes the adjacent riverscape as well as the surrounding landscape. Changes to the setting can have an adverse, neutral or beneficial impact on the ability to appreciate the sites Outstanding Universal Value. The consideration of views is part of understanding potential impacts on the setting of the World Heritage Sites. Many views to and from World Heritage Sites are covered, in part, by the London Views Management Framework (see Policy HC3 Strategic and Local Views and Policy HC4 London View Management Framework). However, consideration of the attributes that contribute to their Outstanding Universal Value is likely to require other additional views to be considered. These should be set out in World Heritage Site Management Plans (see below), and supported wherever possible by the use of accurate 3D digital modelling and other best practice techniques.

7.2.4 Policies protecting the Outstanding Universal Value of World Heritage Sites (WHS) should be included in the Local Plans of those boroughs where visual impacts from developments could occur. It is expected that the following boroughs’ plans (including but not limited to the following) should contain such policies: City of London (Tower of London WHS); Royal Borough of Greenwich (Maritime Greenwich WHS); Hounslow (Royal Botanical Gardens Kew WHS); Lambeth (Westminster WHS); Lewisham (Maritime Greenwich WHS); Richmond (Royal Botanical Gardens Kew WHS); Southwark (Tower of London WHS, Westminster WHS); Tower Hamlets (The Tower of London WHS, Maritime Greenwich WHS); Wandsworth (Westminster WHS); City of Westminster (Westminster WHS). Supplementary Planning Guidance will provide further guidance on settings and buffer zones.

7.2.5 Boroughs should ensure that their Local Plan policies support the management of World Heritage Sites, details of which can be found in World Heritage Site Management Plans. For Outstanding Universal Value, Management Plans should set out;

- the attributes that convey the Outstanding Universal Value, and
- the management systems to protect and enhance the Outstanding Universal Value of the World Heritage Sites

7.2.6 The Mayor will support steering groups in managing the World Heritage Sites and will actively engage with stakeholders in the development and implementation of World Heritage Management Plans. It is expected that the boroughs with World Heritage Sites, GLA, Historic England and neighbouring boroughs will be part of the World Heritage Site Steering Groups that contribute to the management of the sites, including the drafting and adoption of Management Plans.

Other particularly relevant policies in the draft London Plan in terms of conserving the OUV of the Royal Botanic Gardens, Kew WHS include:

- Policy HC1 Heritage conservation and growth
- Policy HC3 Strategic and Local Views
- Policy G1 Green infrastructure
- Policy G3 Metropolitan Open Land
- Policy D1 London's form, character and capacity for growth
- Policy D4 Delivering good design
- Policy D9 Tall buildings – this states that in terms of addressing the impact of tall buildings '*1 e) buildings in the setting of a World Heritage Site must preserve, and not harm, the Outstanding Universal Value of the World Heritage Site, and the ability to appreciate it.*'

B10. London's World Heritage Sites – Guidance on Settings, Supplementary Planning Guidance, March 2012

This adopted Supplementary Planning Guidance (the SPG) supports the implementation of Policy 7.10 of the existing London Plan and will continue to support and future update of the London Plan. As stated in paragraph 1.7 of the introduction:

The purpose of this Supplementary Planning Guidance (SPG) therefore is to support the implementation of Policy 7.10 by providing:

- a consolidated source of information on understanding World Heritage Sites and their settings in the context of London
- a discussion of the elements of setting that contribute to the appreciation of Outstanding Universal Value that should be considered by policy makers, developers and other stakeholders to ensure World Heritage Sites and their settings are conserved and enhanced

- an assessment framework with a stepped approach to assess the effect of development proposals and proposals for change in plan making on London's World Heritage Sites and their settings

The guidance in the SPG reflects national policy and guidance at the time of preparation i.e. shortly before the adoption of the NPPF and the publication of the NPPG and the more recent iterations of the HE Setting Guidance. Its broad thrust and approaches however remain valid as wider heritage policy has not fundamentally transformed in this period.

Aspects of note in the SPG include:

- The identification of the Statement of Outstanding Universal Value and the attendant attributes expressed in the WHS Management Plan as the basis for the assessments of setting and impact on setting (see Section 3.0)
- The recognition that the setting of a WHS may extend beyond any buffer zone (see Paragraph 3.19);
- The recognition that 'All of London's World Heritage Sites have complex and multi-layered settings' (paragraph 4.1) and that 'Each of the London World Heritage Sites is made up of many separate heritage assets, most or all of which contribute to the attributes that make up the World Heritage Site's OUV. While the settings of individual assets within the World Heritage Site may overlap or nest with each other; the World Heritage Site itself has a wider setting of its own.' (paragraph 4.2)
- The identification of a series of elements of setting that may apply to WHSs in London (see Section 4.0):
 - Physical elements: 1. Context; 2. Character; 3. Landscape and Topography; 4. Relationship with the River Thames; 5. Views in, out and across World Heritage Sites; 6. Routes; 7. Public Realm
 - User experience: 8. Diurnal and Seasonal Considerations; 9. Accessibility and Inclusion; 10. Safety and Security
 - Other considerations: 11. Historic and Cultural Associations; 12. Environmental Factors; 13. Sustainability and Climate Change
- The establishment of an framework for assessing the potential impact of development on the setting and OUV of WHSs and assets within those sites (Section 5.0) which reflects the 2011 English Heritage (as was) Guidance on Setting; the as then emerging draft NPPF; and the draft 2011 ICOMOS Guidance on Assessing Impacts on Cultural World Heritage Sites; and
- The recognition in the methodology of the importance of assessing cumulative impacts. As stated in paragraph 5.31: 'The cumulative effect of separate impacts should also be considered. These are impacts that result from incremental changes caused by past, present or potential developments with planning permission that cumulatively with the proposed development can have a significant impact on the setting of a World Heritage Site. The potential cumulative impact of the proposed changes should therefore be assessed to consider whether proposed developments will increase the likelihood of other

- similar developments occurring and any consequences of that. There should also be recognition that previous permissions for similar developments do not necessarily represent acceptability of impacts on setting; as the cumulative effect is different for each new proposal and there may be a tipping-point beyond which further development would result in substantial harm to the OUV, authenticity and integrity of the World Heritage Site.'

B11. Mayor of London's All London Green Grid Supplementary Planning Guidance (2012)

The All London Green Grid (ALGG) Supplementary Planning Guidance (SPG) provides guidance on the implementation of London Plan policy to:

- 1 Protect, conserve and enhance London's strategic network of green and open natural and cultural spaces, to connect the everyday life of the city to a range of experiences and landscapes, town centres, public transport nodes, the countryside in the urban fringe, the Thames and major employment and residential areas;
- 2 Encourage greater use of, and engagement with, London's green infrastructure; popularising key destinations within the network and fostering a greater appreciation of London's natural and cultural landscapes; enhancing visitor facilities and extending and upgrading the walking and cycling networks in between to promote a sense of place and ownership for all who work in, visit and live in London;
- 3 Secure a network of high quality, well designed and multifunctional green and open spaces to establish a crucial component of urban infrastructure able to address the environmental challenges of the 21st century – most notably climate change.

The 2012 SPG:

- 1 Provides guidance on the implementation of all the relevant policies in the London Plan to local neighbourhoods, boroughs, developers and other delivery partners;
- 2 Sets out a vision and spatial framework for London-wide green infrastructure;
- 3 Promotes partnership working across the 11 Green Grid Areas within London and beyond via the Green Arc Partnerships;
- 4 Identifies strategic green infrastructure opportunities.

The Royal Botanic Gardens, Kew; Thames Riverside and locations such as Kew Green and the Old Deer Park which form part of the setting of the WHS are all recognised aspects of the All London Green Grid.

B12. Hounslow Local Plan (2015–30)

Hounslow Local Plan policies CC3 and CC4 are relevant to the consideration of development outside of the WHS.

Policy CC3 Tall Buildings

Policy CC3 provides a framework for the development of tall buildings in the borough. It is notable for its consistent emphasis on the need to manage change in the setting of key heritage assets and in particular the Royal Botanic Gardens, Kew WHS:

'Our approach

To contribute to regeneration and growth, we will support tall buildings of high quality in identified locations which accord with the principles of sustainable development.

We will achieve this by

...

(c) Supporting a limited number of tall buildings in Brentford town centre. These should be carefully designed and sensitively placed so as not to have a significant adverse impact on the setting of, views from and between heritage assets including Royal Botanic Gardens Kew World Heritage Site, Syon Park and the Thames foreshore landscape. They should also respect and respond to the area's special townscape and heritage value;

(d) Supporting tall buildings along sections of the A4 Golden Mile frontage. Specific sites will be identified in the Great West Corridor Plan subject to the delivery of strategic public transport improvements. These should be carefully placed so as not to create a wall of tall buildings, ensuring they relate sensitively to surrounding residential areas and do not have a significant adverse impact on the setting of, or views from heritage assets including Gunnersbury Park, Royal Botanic Gardens Kew World Heritage Site, Syon Park and Osterley Park;

(e) Preserving the predominantly 2 to 3 storey (less than 10m) building heights across the rest of the borough with some limited scope for 4 to 6 storey (up to 20m) buildings/elements along main streets (for example London Road), to assist with way-finding and where the opportunity exists for higher density development;

(f) Not seeking to replace existing tall buildings which are in inappropriate locations (assessed against the criteria of this policy) and not allowing them to be a justification for the provision of new ones;

(g) Undertaking more detailed design analysis including a study to identify spatial sensitivities; and

(h) Working with our partners, particularly Historic England and Royal Botanic Gardens Kew World Heritage Site.

We will expect tall building development proposals to

(i) Be sensitively located and be of a height and scale that is

in proportion to its location and setting, and carefully relate and respond to the character of the surrounding area;

(j) Be of the highest architectural design and standards; be attractive, robust and sustainable;

...

(p) Take opportunities to enhance the setting of surrounding heritage assets, the overall skyline and views;

CC4 Heritage

CC4 provides heritage policy, the following highlights aspects relevant to the Royal Botanic Gardens, Kew WHS:

'Our approach'

We will identify, conserve and take opportunities to enhance the significance of the borough's heritage assets as a positive means of supporting an area's distinctive character and sense of history.

We will achieve this by

...

(d) Working with Royal Botanic Gardens Kew World Heritage Site, London Borough of Richmond and Historic England to conserve and enhance the outstanding universal values of The Royal Botanical Gardens Kew World Heritage Site, its buffer zone and its setting, including views to and from this asset. This includes assisting in the implementation of the World Heritage Site Management Plan;

We will expect development proposals to

(i) Conserve and take opportunities to enhance any heritage asset and its setting in a manner appropriate to its significance;

...

(k) Demonstrate that substantial harm to or loss of a heritage asset is avoided, unless exceptional circumstances can be demonstrated, consistent with the NPPF;

(l) Demonstrate that where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset (see Glossary), this harm will be outweighed by the public benefits of the proposal, including securing its optimum viable use...'.

B13. Richmond Local Plan (2018)

The London Borough of Richmond upon Thames was adopted in July 2018. It includes a policy (LP 6) specifically concerning the Royal Botanic Gardens, Kew WHS, as follows:

Policy L6: Royal Botanic Gardens, Kew World Heritage Site

The Council will protect, conserve, promote and where appropriate enhance the Royal Botanic Gardens, Kew World Heritage Site, its buffer zone and its wider setting. In doing

this, the Council will take into consideration that:

- The World Heritage Site inscription denotes the highest significance to the site as an internationally important heritage asset.
- The appreciation of the Outstanding Universal Value of the site, its integrity, authenticity and significance, including its setting (and the setting of individual heritage assets within it) should be protected from any harm
- Appropriate weight should be given to the Royal Botanic Gardens, Kew World Heritage Site Management Plan and the Royal Botanic Gardens, Kew Landscape Master Plan

The accompanying text goes on to state that LB Richmond upon Thames will work closely with its partners to prevent any further harmful impacts 'from development proposals, particularly as a result of inappropriate and unsympathetic tall buildings, in Brentford and Hounslow's wider Great West Corridor'.

Other policies of note in relation to the conservation of the WHS's OUV and setting include:

- Policy LP 2: Building Heights
- Policy LP 3: Designated Heritage Asset
- Policy LP 4: Non-Designated Heritage Assets
- Policy LP 5: Views and Vistas
- Policy LP 7: Archaeology
- Policy LP 13: Green Belt, Metropolitan Open Land and Local Green Space
- Policy LP 18: River corridors
- Policy LP 43: Visitor Economy

B14. Historic England, Advice Note 4: Tall Buildings (2015) (CDF.14)

This guidance is relevant to the consideration of tall buildings proposals that may affect the setting of the WHS. It was published in December 2015 and replaced earlier 2007 guidance prepared by CABE and English Heritage. It provides high level advice and guidance for developers, designers and decision makers in relation to the development of tall buildings and potential impacts on the historic environment.

The guidance indicates in paragraph 1.1 that '...In the right place well-designed tall buildings can make a positive contribution to urban life. Past examples show us that they can be excellent works of architecture, and some of the best post-war examples of tall buildings are now listed.', it goes one to state on paragraph 1.2 that 'However, if the building is not in the right place and well designed a tall building, by virtue of its size and widespread visibility, can also seriously harm the qualities that people value about a place...One of the principal failings in the design of certain tall buildings was a lack of understanding of the nature of the area around them, and the impact they would have on both specific features of the historic environment and its general character. There have been many examples of tall

buildings that have had a lasting adverse impact through being unsuitably located, poorly designed, inappropriately detailed and badly built and managed.'

It goes on to note in paragraph 4.6 that 'Careful assessment of any cumulative impacts in relation to other existing tall buildings and concurrent proposals will also be needed to fully understand the merits of the proposal. The existence of a built or permitted tall building does not of itself justify a cluster or additions to a cluster.'

Section 5, Assessing a proposal, states in paragraph 5.1 that 'Many of the issues associated with determining an application for a tall building proposal are the same as for other applications with heritage implications and should therefore be approached in the same way... Some aspects of tall buildings proposals raise particular issues, however, and these are discussed below.'

The guidance goes on to highlight in paragraph 5.2 the issues relating to WHSs; indicating the importance of these assets, it states that 'Where relevant, the LPA will need to consider the impact on world heritage sites. The statement of significance and the management plan prepared for each World Heritage Site (which may include a buffer zone to help protect its setting) are material considerations in the planning process.'

Paragraph 5.5 is of particular note in relation to this appeal, stating that:

When considering any proposal that has an adverse impact on a designated heritage asset through development within its setting, 'great weight should be given to the asset's conservation', with any harm requiring a 'clear and convincing justification' (NPPF paragraph 132). In assessing this justification, and in weighing any public benefits offered by a tall building proposal, local planning authorities will need to pay particular regard to the policies in paragraphs 8 and 9 of the NPPF that state that economic, social and environmental gains are to be sought jointly and simultaneously in order to deliver positive improvements in the quality of the built, natural and historic environment. This may involve the examination of alternative designs or schemes that might be more sustainable because they can deliver public benefits alongside positive improvement in the local environment. If a tall building is harmful to the historic environment, then without a careful examination of the worth of any public benefits that the proposed tall building is said to deliver and of the alternative means of delivering them, the planning authority is unlikely to be able to find a clear and convincing justification for the cumulative harm.'

B15. Historic England, The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning Note 3 (Second Edition – Dec. 2017)

The guidance is relevant to proposals that may affect the setting of the WHS, or of buildings within it. It defines setting and explains how it can contribute to the significance of a historic asset. It sets out the principles for assessing the impact of development within the settings of historic assets. It is intended to be used alongside NPPF and NPPG and the Conservation Principles and supports the implementation of their policy and advice. It provides information on issues relating to setting and the assessment of impacts on it.

Points to note in Part 1 include:

Paragraph 8

'Extensive heritage assets, such as historic parks and gardens, landscapes and townscapes, can include many heritage assets, historic associations between them and their nested and overlapping settings, as well as having a setting of their own. A conservation area is likely to include the settings of listed buildings and have its own setting, as will the hamlet, village or urban area in which it is situated (explicitly recognised in green belt designations).' (Bullet Point 2).

Paragraph 9 and subheadings/bullets

'Setting and the significance of heritage assets

9 Setting is not itself a heritage asset, nor a heritage designation, although land comprising a setting may itself be designated (see below Designed settings). Its importance lies in what it contributes to the significance of the heritage asset or to the ability to appreciate that significance. The following paragraphs examine some more general considerations relating to setting and significance.

Change over time

Settings of heritage assets change over time. Understanding this history of change will help to determine how further development within the asset's setting is likely to affect the contribution made by setting to the significance of the heritage asset. Settings of heritage assets which closely resemble the setting at the time the asset was constructed or formed are likely to contribute particularly strongly to significance but settings which have changed may also themselves enhance significance, for instance where townscape character has been shaped by cycles of change over the long term. Settings may also have suffered negative impact from inappropriate past developments and may be enhanced by the removal of the inappropriate structure(s).

Cumulative change

Where the significance of a heritage asset has been compromised in the past by unsympathetic development affecting its setting, to accord with NPPF policies

consideration still needs to be given to whether additional change will further detract from, or can enhance, the significance of the asset. Negative change could include severing the last link between an asset and its original setting; positive change could include the restoration of a building's original designed landscape or the removal of structures impairing key views of it (see also paragraph 40 for screening of intrusive developments).

...

Setting and economic viability

Sustainable development under the NPPF can have important positive impacts on heritage assets and their settings, for example by bringing an abandoned building back into use or giving a heritage asset further life. However, the economic viability of a heritage asset can be reduced if the contribution made by its setting is diminished by badly designed or insensitively located development. For instance, a new road scheme affecting the setting of a heritage asset, while in some cases increasing the public's ability or inclination to visit and/or use it, thereby boosting its economic viability and enhancing the options for the marketing or adaptive re-use of a building, may in other cases have the opposite effect.'

Paragraphs 10, 11, 12 and 13 and subheadings/bullets

Views and setting

10 The contribution of setting to the significance of a heritage asset is often expressed by reference to views, a purely visual impression of an asset or place which can be static or dynamic, long, short or of lateral spread, and include a variety of views of, from, across, or including that asset.

- Views which contribute more to understanding the significance of a heritage asset include: • those where the composition within the view was a fundamental aspect of the design or function of the heritage asset
- those where town- or village-scape reveals views with unplanned or unintended beauty
- those with historical associations, including viewing points and the topography of battlefields
- those with cultural associations, including landscapes known historically for their picturesque and landscape beauty, those which became subjects for paintings of the English landscape tradition, and those views which have otherwise become historically cherished and protected
- those where relationships between the asset and other heritage assets or natural features or phenomena such as solar or lunar events are particularly relevant

12 Assets, whether contemporaneous or otherwise, which were intended to be seen from one another for aesthetic, functional, ceremonial or religious reasons include: ...

- historic parks and gardens with deliberate links to other designed landscapes and remote 'eye-catching' features or 'borrowed' landmarks beyond the park boundary

13 Views may be identified and protected by local planning

policies and guidance for the part they play in shaping our appreciation and understanding of England's historic environment, whether in rural or urban areas and whether designed to be seen as a unity or as the cumulative result of a long process of development. This does not mean that additional views or other elements or attributes of setting do not merit consideration. Such views include: ...

- views identified in character area appraisals or in management plans, for example of World Heritage Sites
- important designed views from, to and within historic parks and gardens that have been identified as part of the evidence base for development plans, and
- views that are identified by local planning authorities when assessing development proposals

Where complex issues involving views come into play in the assessment of such views – whether for the purposes of providing a baseline for plan-making or for development management – a formal views analysis may be merited.'

Part 2: Setting and Views – A Staged Approach to Proportionate Decision-Taking

Part 2 of the document sets out a staged methodology for assessing setting and change.

- 'Stage 1: Identify the historic assets that might be affected by a proposed change or development.
- Stage 2: Define and analyse the settings to understand how they contribute to the significance of the historic assets and, in particular, the ways in which the assets are understood, appreciated and experienced.
- Stage 3: Evaluate the potential impact of a proposed change or development on that significance.
- Stage 4: If necessary, consider options to mitigate or improve the potential impact of a proposed change or development on that significance.'

Its introductory elements contain a number of general points:

- 17 All heritage assets have significance, some of which have particular significance and are designated. The contribution made by their setting to their significance also varies. Although many settings may be enhanced by development, not all settings have the same capacity to accommodate change without harm to the significance of the heritage asset or the ability to appreciate it. This capacity may vary between designated assets of the same grade or of the same type or according to the nature of the change. It can also depend on the location of the asset: an elevated or overlooked location; a riverbank, coastal or island location; or a location within an extensive tract of flat land may increase the sensitivity of the setting (ie the capacity of the setting to accommodate change without harm to the heritage asset's significance) or of views of the asset. This requires the implications of development affecting the setting of heritage assets to be considered on a case-by-case basis.

18 Conserving or enhancing heritage assets by taking their settings into account need not prevent change; indeed change may be positive, for instance where the setting has been compromised by poor development. Many places coincide with the setting of a heritage asset and are subject to some degree of change over time. NPPF policies, together with the guidance on their implementation in the Planning Policy Guidance (PPG), provide the framework for the consideration of change affecting the setting of undesignated and designated heritage assets as part of the decision-taking process (NPPF, paragraphs 131–135 and 137).

19 Amongst the Government's planning policies for the historic environment is that conservation decisions are based on a proportionate assessment of the particular significance of any heritage asset that may be affected by a proposal, including by development affecting the setting of a heritage asset...’

B16. The Thames Landscape Strategy Hampton to Kew (1994 and 2012)

The ‘Thames Landscape Strategy’ is in fact a not-for-profit partnership that champions the river corridor between Weybridge, Hampton and Kew. The aim of the partnership is to understand, promote and conserve this stretch of the river and through the implementation of projects, programmes and initiatives, to enhance its natural and manmade character.

The work of the ‘Thames Landscape Strategy’ is based on a document entitled the Thames Landscape Strategy. This Strategy was launched in 1994 and established a 100-year blueprint for this stretch of the Thames. It was reviewed and updated in 2012.

The report provides strategic guidance for the Thames corridor as well as a detailed character appraisal of the river's historic, cultural, natural and recreational associations. It provides an analysis of the character of the river landscape providing a vision for the natural and man-made elements of the landscape. It is founded on an evidence base which draws together the history, topography, culture, politics and wildlife of the river corridor. This has then shaped policy, management, projects and design.

To achieve its aims, the organisation brings together a partnership of 14 statutory and non-statutory organisations, over 250 local groups and numerous individuals to inform policy and to provide a link between the authorities, the community and the vision set out in the Strategy document.

The Strategy includes the stretch of the Thames which flows past the WHS.

C. History of the Royal Botanic Gardens, Kew

C1. Early royal Richmond and Kew

The Royal Botanic Gardens, Kew directly descend from the world of royalty and the royal court, located first at Richmond and later also at Kew. Richmond developed as a royal court from 1299 under Edward I, with nearby Kew becoming a popular and convenient location for royal courtiers to build their rural villas. The early story of Richmond and Kew maps the variable fortunes of the successive royal families along with their interests and roles as patrons of the arts, architecture, garden design and later, of the developing sciences. Intertwined with these themes are wider socio-economic and political forces, such as the 17th-century rise of the merchant classes, one of whom, Samuel Fortrey, built the Dutch House as his family home. This later became a royal nursery under George II and Kew Palace under George III.

C2. Women of the Enlightenment: Richmond and Kew under Queen Caroline and Princess Augusta

Against this formative early royal background, the royal legacy upon which the Royal Botanic Gardens has been built becomes more tangible in the Georgian era, when two famous landscape gardens were developed at Richmond and Kew by two highly influential royal women related by marriage: Queen Caroline, wife of George II, and her daughter-in-law Princess Augusta, wife of Frederick, the Prince of Wales, and mother of George III. Caroline reinvigorated royal links with Richmond and Kew when she was Princess of Wales, seeking a rural family home for herself and her husband, the future George II. It was Caroline who bought the Dutch House for her daughters in 1728, transforming it into a royal house. This undoubtedly encouraged her son, Prince Frederick, to rent the property next door to the Dutch House when it became vacant at about the same time, expanding the old house to become the new White House, designed by William Kent. Frederick's new property at Kew included a pre-existing garden developed by the Capel family, whose development and collections of exotic imported plants had been documented by the famous diarist John Evelyn and others.

Caroline, and first Frederick and then Augusta (after his early death in 1751), engaged the leading garden designers of the day to help them shape and deliver their visions at Richmond and Kew: Charles Bridgeman, William Kent and William Chambers. Both Richmond and Kew Gardens were internationally highly regarded in their day and were much-copied, acting as catalysts to highlight and promote the early development of the English landscape movement. As an example, Kew Gardens appeared on Empress Catherine

of Russia's famous Green Frog Wedgewood dinner service, commissioned in 1773 and featuring aesthetically pleasing landscape views from across Britain.

Of the work of these great Georgian designers, Chambers's work on Kew Gardens is the most identifiable in the modern landscape. His unique Chinese-inspired Pagoda is the most obvious survivor of this era of Georgian landscape design, along with the Orangery, once the largest greenhouse in England. Notable echoes also survive in the landscape structure of the Kew side of the Royal Botanic Gardens, including several mounds and the Palm House Pond. There are also other, less publicly well known, buildings that survive from this period, most notably the Ruined Arch. Chambers's Temples of Bellona and Arethusa were later relocated within the gardens and can now be found rebuilt in their new positions, still on the Kew side of the Royal Botanic Gardens, whilst the Temple of Aeolus is a Victorian rebuild of Chambers's design on its original site. Little physical fabric now survives of Caroline's gardens on the Richmond side of the gardens, due to her grandson, George III's, subsequent commissioning of 'Capability' Brown to transform the Richmond Gardens.

Augusta's Physic or Exotic Garden, first planted at Kew between 1759 and 1763 and expanded until her death in 1772, is often taken to be the origin of the scientific heart of the Royal Botanic Gardens. Donors sent plants and seeds back to Kew from their travels, which were supplemented with acquisitions from nurseries and private collections. Lord Bute, Augusta's friend and colleague in the development of her gardens after her husband's death, helped to establish an arboretum at Kew by donating choice trees from the estate of his late uncle, the Duke of Argyll. By 1768, John Hill's first edition of the '*Hortus Kewensis*' (a list of the plants grown at Kew) contained over 3,400 species, a collection that was dominated by 2,700 species of herbaceous plants.

C3. Farmer George and Joseph Banks

George III inherited first Richmond from his grandfather, George II, in 1760, then Kew from his mother, Augusta, in 1772. In 1803 the high walls that had previously separated Kew Gardens from Richmond Garden were demolished, uniting the two gardens for the first time into a single site.

In the 1760s, George III and Queen Charlotte made Richmond Lodge their rural family home, next to George's mother's Kew Gardens, George's own childhood rural home. The 1760s and early 1770s at Richmond were marked by a flurry of building activity and extensive landscape redesign, as George engaged 'Capability' Brown to comprehensively redesign Richmond Gardens and William Chambers to

build a new Richmond Palace to replace Richmond Lodge. While Brown's landscape design was implemented through the 1760s and into the 1770s, Chambers's palace was abandoned at first floor level when George's attention turned to Kew on the death of his mother in 1772.

As Brown was wont to be, his work was utterly transformative, sweeping away Bridgeman and Kent's Richmond Gardens. Echoes of Brown's work in Richmond Gardens can be identified at the Royal Botanic Gardens beneath the later Victorian landscape design that overlays and sometimes uses them. To make the site appear larger, Brown had opened Richmond Gardens fully to the Thames and to Syon Park opposite, which Brown had also designed, removing Bridgeman's earlier formal Thames-side terrace and installing a ha-ha. In so doing, Brown co-opted the Thames as his trademark serpentine water feature separating Richmond Gardens and Syon Park. Much of this open relationship with the Thames has since been closed in, however, the view at the end of the Victorian Syon Vista remains intentionally open, retaining a glimpse of Brown's earlier vision. Of note also are Brown's excavated earthworks near the Thames, named the 'Hollow Walk', an attempt to introduce topographical interest to this notoriously flat site, which were later transformed into the planted hillsides of Rhododendron Dell.

Originating in the same period, but not apparently designed by Brown, is Queen Charlotte's Cottage, a cottage orné used by the royal family on the Richmond side of the Royal Botanic Gardens on the site of Queen Caroline's earlier Menagerie. Queen Charlotte's Cottage was constructed by 1771 and is often accredited to Chambers, though this is not proven. The Cottage still stands in the Gardens and is managed by Historic Royal Palaces as part of their suite of buildings at the Royal Botanic Gardens. Also surviving, and now in private ownership in the Old Deer Park, is the Palladian-style Observatory built for George III to observe the transit of Venus in 1769, paid for by his mother, Augusta.

After Augusta died in 1772, George and Charlotte moved to the White House at Kew, ordering Richmond Lodge to be demolished and ultimately abandoning the partially built Richmond Palace. At Kew Gardens, George left the structure of the landscape established by his parents, Frederick and Augusta, largely intact. By the end of the decade he had started to favour Windsor as his rural retreat, with the White House falling into abandonment. This change in focus did not stop George from making alterations at Kew, the most notable being the refurbishment of the Dutch House as the new Kew Palace; the demolition of his childhood home, the White House, of which only the kitchens now survive (now in the management of Historic Royal Palaces); and his building of the riverside Castellated Palace in its place, designed by James Wyatt. The Castellated Palace was the victim of spiralling costs and an ever-delayed build programme and was abandoned before completion; it was demolished after George III's death by his son, George IV.

George III brought the driving ambition of Joseph Banks to bear on the exotic plant collections established by his mother at Kew. Freshly returned from his travels to

Australia with Captain Cook, by 1773 Banks had firmly established himself at Kew, and unofficially he promoted his 'superintendence' over the botanic gardens there. Where plant collections in Augusta's time had been largely opportunistic, Banks developed a targeted and purposeful collecting strategy, instigating collecting campaigns in India, Abyssinia, China and Australia. By the early 1800s, virtually no ship left India or any other colony without some living or preserved specimen for Kew. The fame of the botanic gardens at Kew spread so widely that Empress Catherine II of Russia requested a plant collection from Kew in 1795, organised by Banks.

Banks's attempts to transplant the breadfruit plant from Tahiti to the Caribbean to use as food for slaves marked a fundamental shift in colonial botany, establishing the idea that plants could purposefully be moved around the globe en masse for economic gain. Banks's scientific endeavours and reputation, bolstered by his advantageous relationship with George III and combined with his driving ambition for his superintendence at Kew, securely cemented Kew Garden's scientific roots, placing Kew firmly at the scientific and colonial heart of George III's British Empire.

Banks's death in June 1820 coincided with the death of George III in January 1820 and the botanic gardens subsequently went into a 20-year decline. By 1831 Kew no longer actively collected plants and all of its foreign collectors had been withdrawn.

C4. Decline and reinvention: The birth of the Royal Botanic Gardens

Under George IV and his brother, William IV, royal interest in the estate at Kew waxed and waned. Kew Palace was effectively abandoned, with George IV purchasing and moving into Hunter House and the two adjacent houses, later turned into Kew's Herbarium. He transferred the Kew estate to the Office of Woods and Forests, with charges for its maintenance borne by the Civil List. George also ordered the demolition of his father's ill-fated Castellated Palace, a process which was completed by 1827.

William IV briefly considered massively extending Kew Palace to create a new, modern palace attached to the smaller historic building. The plans by James Wyatville were never implemented, though a small folly was built to his plans in the gardens, King William's Temple, which still survives today.

Other children of George III also maintained their links with Kew, owning houses alongside Kew Green, most notably the Cambridge family in Cambridge Cottage and the Duke of Cumberland in the house next door to Cambridge Cottage, which had once been Lord Bute's study when he had been assisting Princess Augusta to develop Kew Gardens.

The future of the estate at Kew was finally sealed under Queen Victoria during a Treasury Review of the Royal Household. An extensive three-year review of the gardens was undertaken examining their financial resourcing and

potential future, including a 1839 Parliamentary Inquiry, with opinion split as to whether the largely abandoned gardens should be closed or invested in. The government report concluded that an enlarged kitchen garden at Kew could provide fresh produce for the London palaces, and, in 1840 the botanic gardens could be transferred to the Office of Woods and Forests and the charge removed from the Civil List. In 1841 William Hooker was appointed as the first director of the new Royal Botanic Gardens.

C5. The flowering of the Victorian Royal Botanic Gardens

For most of the Victorian period, the public gardens were divided into two distinct spaces: the Botanic Gardens and the Pleasure Grounds, divided by a fence until 1895. The Crown also retained areas around Kew Palace and Queen Charlotte's Cottage.

Within the wire fence surrounding the Botanic Gardens, William Hooker embarked on a period of investment and reinvention, constructing many of the buildings we see at the gardens today. Proudest of these is the iconic Palm House, commissioned in 1844 and designed by Richard Turner and Decimus Burton, with its associated Campanile acting as both water tower and smokestack for the Palm House boilers. Burton was also employed to deliver a complete reconceptualisation of the Botanic Gardens, working the remains of Frederick, Augusta and Chambers's 18th-century design into this new concept as it suited, largely through renovation and redesign. The Temple of the Sun; the Temple of Aeolus (completely rebuilt in stone) on Frederick's mound (cleared and grassed); Frederick's lake now shrunken and reinvented as the Palm House Pond (redesigned and with the Palm House built over part of it); the Orangery (with new large windows inserted); and the glasshouses (mostly enlarged and renovated) were all retained and altered to suit the new, proud Royal Botanic Garden. The creation of the formal promenade along the Broad Walk and Little Broad Walk to link the new Palm House with Burton's new Main Gates involved long negotiations with the Crown to obtain more land, and the demolition of buildings and extensive earth moving to obtain the intended effect. William Hooker and Burton's developing vision for the Royal Botanic Gardens was bold and extensive and, once implemented, highly successful. They took opportunities as they arrived, with, for example, the creation of the Herbaceous Ground when the royal Kitchen Garden was handed over in 1846. These were later laid out as the more scientifically arranged Order Beds in the 1860s.

In the Pleasure Grounds, Nesfield was employed by the First Commissioner of Woods and Forests in 1844 to design the layout of a new National Arboretum. This was Nesfield's first meeting with Kew's Director, William Hooker, and his design evolved as the siting of the Palm House was changed several times before settling into its current location. Nesfield designed his de la mode parterres at the Palm House to intimately connect this iconic building with the wider landscape design of the proposed Arboretum. Though still separated by a wire fence, Nesfield conceived of the Botanic

Garden and National Arboretum as a single entity. The vistas radiating from the Palm House and connecting with the Pagoda and the Thames were his stroke of genius that ordered this much-divided landscape into a comprehensive whole and created the conceptual backbone for the new scientifically-ordered tree plantings in the Arboretum. Hooker and Nesfield took this concept of vistas a stage further with the development of Syon Vista, completed in 1852, and Syon Lake, planned in 1855.

Also in the Pleasure Grounds, after many years of campaigning, William Hooker secured the funding for Burton to design a second major glasshouse, the Temperate House, which is now the world's largest surviving Victorian glasshouse. The building was limited by its funding and opened, only two-thirds finished, in 1863. It wasn't until 1899 that the building was finally completed, long after Hooker's death in 1865.

Alongside the building and landscape reorganisations needed to house the burgeoning plant collections and to enable access to them by scholars and the public, the Victorian period also saw the institution's blossoming as a scientific establishment. Central to this mission was the creation of Kew's Herbarium and a series of museums across the site, to house preserved plant collections and related artefacts.

The Herbarium was housed in George IV's Hunter House and its first curator was appointed in 1853. The Herbarium rapidly grew in size and importance, with the donation of Jeremy Bentham's personal herbarium and, later, Joseph Hooker's (William Hooker's son and the second Director of the Royal Botanic Gardens) securing of the East India Company's collection. Many other renowned botanists and private collectors followed Bentham's example in donating their herbaria, and soon Kew's collection was only rivalled by the collection held at the British Museum's own collection, which was eventually moved to the purpose-built Natural History Museum in Kensington.

Under Joseph Hooker, the Royal Botanic Gardens received other significant scientific bequests, including the funds to build and equip a laboratory to investigate the effects of insects, blight and other plant diseases, given by Thomas Jodrell Phillips-Jodrell and opened in 1876. The main scientific laboratory at Kew, the Jodrell Laboratory, is still named in his honour. In 1879 Marianne North offered to donate her extensive collection of botanical paintings, which she had painted on her global travels, along with the funds to build a gallery and lodge house in the Pleasure Grounds. This made her botanical drawings available to Kew's visitors, and expanded Kew's already substantial botanical art collection housed in the Herbarium.

Thiselton-Dyer, Joseph Hooker's son in law, became the third director in 1885. The emphasis shifted to consolidation and increased public access, with new smaller gardens, new opening hours and new visitor services, including the 1888 Refreshment Pavilion, later burnt to the ground by suffragettes in 1913. Kew's scientific mission continued apace, including the fire-proofing and refurbishment of

the Herbarium building, and the relocation of the British Museum's herbarium to Kew from the Natural History Museum, achieved in 1901. Thiselton-Dyer made the persuasive argument that Kew was a place of research playing a central role on the economies of the Empire, whilst the British Museum was simply a repository. Thiselton-Dyer also oversaw the expansion of the housing for the living collections, including the first Alpine House in 1887 and the completion of the Temperate House in 1899.

C6. The 20th-century Royal Botanic Gardens: Consolidation and redefinition

Through the 20th century, the Royal Botanic Gardens, Kew has consolidated and redefined itself, weathering the challenges of two World Wars and the end of the British Empire, within which it had been a major player at the centre of a network of colonial gardens. The Royal Botanic Gardens, Kew continued to grow as an international visitor destination and developed its role as an internationally significant scientific institution and educational establishment. Its iconic Victorian buildings have needed repair and renovation as they have aged, with major renovations in the Palm House in the 1950s and 1980s, and in the Temperate House in 1972.

Kew's experience of the two World Wars is described in the 'The Story of Kew Gardens in Photographs' (Parker & Ross-Jones 2013):

'During the two World Wars, life at the Gardens went on with remarkably little disruption. In World War I the Gardens maintenance and daily routine was disturbed, but this was more probably due to the replacement of the established gardeners by volunteer staff and it was not an enduring problem. At the outbreak of World War II, the Gardens closed to the public while the reduced staff were redeployed and air raid shelters for staff and visitors were constructed, but they were soon re-opened and attendance actually exceeded peacetime numbers. Irreplaceable library items were evacuated to Oxfordshire and Gloucestershire.'

During both wars, lawns were dug up as households were urged to 'Dig for Victory' and public land (including Kew Green) was given over to allotments in the drive to make Britain self-sufficient. The gardens assumed a new function, creating a 'model' allotment which sought to instruct the public on the best way to produce their own vegetables and making some of the land available to local residents for their use. Research at Kew became more directly concerned with the war effort, the botanists turning their attention to finding alternatives to food crops and medicinal plants that could no longer be imported, and experimental work such as the application of nettle fabric for reinforcing plastic in aircraft construction.

More than 30 women gardeners were employed at Kew during World War I, with the majority of them remaining until 1918 and some staying on until 31st of March 1922, when the employment of women gardeners was terminated. During the next war, conscription of women into war work became compulsory in Britain in 1941 and women were once again

called upon to fill the holes left vacant at Kew, this time in greater numbers than before.'

One of the key developments of the mid-20th century was the formalisation of Kew's horticultural education. During the 19th century, apprentices aged 20 to 25 with a certain amount of practical experience would come to Kew for two years, working in the Gardens during the day and attending lectures in the evening, held in the Iron Room in the Melon Yard, a cold, uncomfortable building. At the end of their apprenticeship they would be issued with a written testimonial, later replaced by the Kew Certificate. In 1871, the Kew Mutual Improvement Society was established by the apprentices to provide horticultural lectures; this society still exists today, providing lectures open to all. In 1963 this all changed, with the launch of the new three-year Kew Diploma. This course formalised the Gardens' horticultural education, providing an internationally recognised qualification for 20 students a year. Lectures were held in the daytime in the purpose-built Jodrell Lecture Theatre, and a variety of subjects were taught in the classrooms alongside practical experience and project work. In 1990, William Hooker's Museum No. 1 was converted into a dedicated School of Horticulture, providing a new home for the Kew students. Today the Kew Diploma is one of the leading horticultural qualifications in the world, running alongside nearly ten specialist certificate programmes and a range of apprenticeship opportunities.

Visitor numbers steadily grew through the 20th century. The principle of seven day a week access to the Royal Botanic Gardens was established in 1883; by 1921 the Gardens were open from 10am to dusk every day of the year, bar Christmas Day. From their formation in 1841 to 1916, admission to the Royal Botanic Gardens had been free of charge. Admission charges of a penny were first imposed in 1916 and were abolished and reinstated several times, until 1951 when the fee increased to 3p. On decimalisation in 1971, the charge became 1p in the new currency, and famously remained so until 1983, when it became 15p. As the Gardens have increasingly relied on visitor income, charges have increased, accelerating at the end of the 20th century and into the 21st. Turnstiles were installed in 1916, and reliable visitor numbers have been available since then, peaking in the 20th century in 1946 with over 1.5 million visitors. The popularity of the Royal Botanic Gardens, Kew as a visitor attraction across the 20th century is reflected in the fact that since 1908, when the first London Underground pictorial poster was produced, Kew, along with London Zoo and Hampton Court, has been one of the most popular locations to feature on the Underground poster. Visitor services at the Royal Botanic Gardens have developed alongside the swelling visitor numbers; the 1992 Victoria Gate Visitor Centre and Kew's first TV commercial in 1994 underline how central visitors had become to the financial sustainability of the Royal Botanic Gardens by the end of the 20th century.

Through the second half of the 20th century, the Royal Botanic Gardens, Kew repositioned itself as an institution, away from its role at the heart of the dying British Empire and towards a more objective botanical and horticultural science, research and practice, and a focus on the

conservation of global plant and fungal diversity. Facilities for scientific research and for living and preserved plant and fungal collections continued to grow and develop, supplemented in 1965 with the acquisition of the lease for Wakehurst Place in Sussex. The Physiology Section and the Seed Unit moved to Wakehurst Place in 1973, creating the opportunity for the later Millennium Seed Bank project, which encapsulated the ambition of the Royal Botanic Gardens to be a forward-looking conservation organisation. The most significant scientific investment at the Royal Botanic Gardens, Kew during this time was the new Princess of Wales Conservatory, named in honour of Princess Augusta and partially located on the site of her original Physic Garden. With its ten climate zones, the new glasshouse expanded the plant ecosystems available to grow living collections at the Royal Botanic Gardens, Kew, and created new opportunities for education and visitor interaction.

C7. 21st-century World Heritage Site: Innovation and restoration

The Royal Botanic Gardens, Kew celebrated the new millennium with the opening of the Seed Bank at Wakehurst Place and the stated ambition to conserve 25% of the world's plant species in the Seed Bank by 2020. Whilst looking forward to coming plant and fungal conservation challenges in a changing world, Kew also embarked on a celebration of its unique heritage, winning its place on the UNESCO list of World Heritage Sites in 2003.

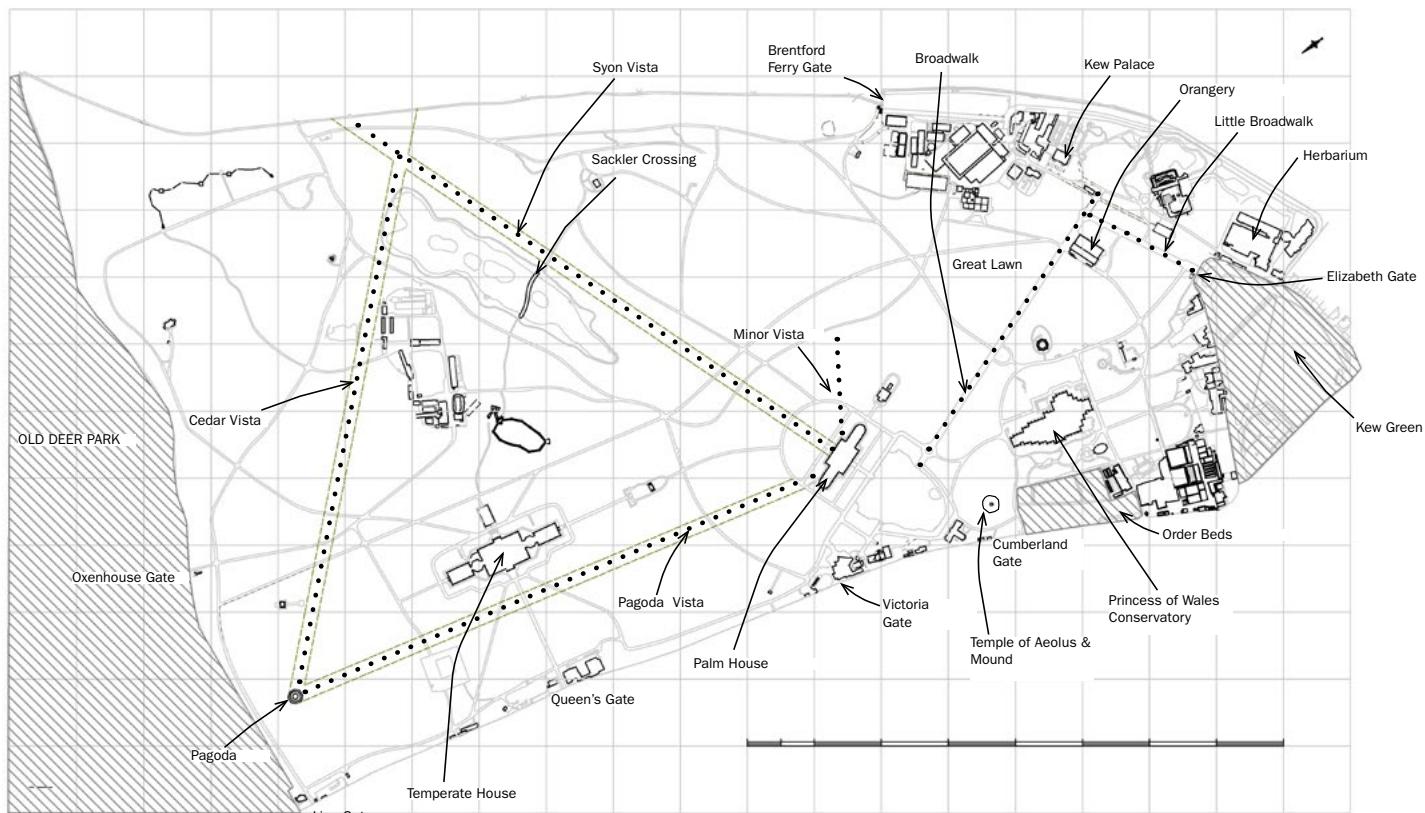
Kew Gardens has enjoyed significant investment in its heritage in the first two decades of the 21st century, with Historic Royal Palaces renovating and opening to the public Kew Palace, the Kew Palace Kitchens and the Pagoda, alongside the ongoing management of Queen Charlotte's Cottage. Site masterplanning has sought to reinforce the historic landscape structure of the Gardens whilst creating new opportunities for visitors to explore the Gardens from new vantage points, including the Sackler Bridge over the Syon Lake and the Treetop Walkway.

The collections and scientific activities have continued to be at the centre of Kew's mission, with extensive extensions to the Herbarium and Library buildings, a new Alpine House; an extension to the Jodrell Laboratory and a new, securely contained, Quarantine House. The Shirley Sherwood Gallery of Botanical Art has been a very successful in bringing new botanical art collections to Kew as visiting exhibitions, supporting Kew's scientific work and making these unique art collections available to the public, to artists and to scholars.

Visitor numbers have continued to grow through the first decades of the 21st century. In 2001–02 just over 860,000 visitors came to Kew. These figures received a boost in the years immediately following the attainment of WHS status, rising to over a million visitors in 2004 and 1.5 million in 2005. Though they have fluctuated, visitor numbers have not fallen below 1 million during the 21st century and have been steady at 1.8 million a year for the period 2016–2018, comfortably beating the 20th-century peak of just over 1.5 million visitors in 1946. New investments in visitor services,

including the Hive and the new Children's Garden, seek to secure this level of visitor interest going forward, ensuring a more stable financial foundation for the Royal Botanic Gardens, resulting in a record-breaking 2 million visitors coming to Kew in 2018–19, for the first time in its history.

Kew's mission today is to be the global resource for plant and fungal knowledge. Plants and fungi hold the key to help solve the global challenges of biodiversity loss, climate change and food security, through the fundamental life-giving processes they drive, the properties they contain, and the materials and food they provide. Research at Kew continues to utilise the strengths of its heritage, accumulated collections, knowledge and data to address these urgent challenges.

Figure 1: Royal Botanic Gardens, Kew features plan

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D. Setting of the WHS

D1. Introduction

This appendix describes the setting of the Royal Botanic Gardens, Kew (RBG Kew) World Heritage Site (WHS) and sets out how that setting contributes to the Outstanding Universal Value (OUV) of the WHS. The description of setting is intended to support decision makers with regard to planning applications for developments that may affect the setting and OUV of the WHS and to inform the internal management of the WHS by RBG Kew, and the design and implementation of development proposals within the site.

This appendix forms part of a suite of documents relating to the management of the WHS, including the site-wide Conservation Plan (CBA 2002). These other documents contain detailed assessments of the history, development, features and Outstanding Universal Value of the WHS. These assessments are not repeated in this appendix.

D2. Need for an up-to-date description of setting

Development outside of the WHS has the potential to affect its setting, negatively and positively, and hence affect its Outstanding Universal Value. This issue has been recognised since inscription. The 2003 inscription review mission by ICOMOS noted the negative impact of existing

Haverfield Estate towers, stating that: ‘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.’ The later 2010 Statement of Outstanding Universal Value, approved by UNESCO (see Section 3), also noted that ‘Development outside this buffer zone may threaten the setting of the property.’ The 2014 WHS Management Plan and 2014 Periodic Report for the WHS further highlighted the growing issues posed by new development around the site. The 2014 Periodic Reporting stated that ‘inappropriate development outside buffer zone is causing harm to WHS’ as are ‘New buildings (and light outspill) affecting WHS and setting’.

The primary cause of this concern is the development of buildings, particularly tall buildings, which are visible from within the WHS. This concern has been exacerbated by a number of recent planning applications, including from within the ‘Great West Corridor’ development opportunity area, which would affect the setting of the WHS and key buildings within it, and thus the Outstanding Universal Value (OUV) of the WHS.

This analysis of setting has therefore been developed to inform decision makers and to provide a foundation for policies in the WHS Management Plan.

D3. Scope of Analysis

This appendix describes, in a concise manner, the setting of the Royal Botanic Gardens, Kew World Heritage Site and the contribution that its setting makes to its OUV.

The WHS wholly or partially encompasses a large number of designated assets including:

- One registered historic park and garden, Grade I
- Two conservation areas: Kew Green and the Royal Botanic Gardens, Kew
- Fifty-six individual listed buildings and structures, ranging from Grade I to Grade II
- One scheduled monument (Kew Palace)

Each asset has its own setting; these are not individually described here. To support the aims of the WHS Management Plan the setting of a small number of the iconic buildings within the WHS that contribute to its OUV have been briefly described/summarised, including the Palm House, Temperate House, Princess of Wales Conservatory, Orangery, Kew Palace and Pagoda (see Figure 1 for location of key features mentioned).

The analysis has been informed by relevant international, national and local policy and guidance (see Section 1.4 of the Plan and Appendix B – Legislation and Policy Context).

A draft of the analysis was provided to key stakeholders/consultees prior to its incorporation into the WHS Management Plan. This process has seen sections of the draft analysis placed within the main body of the Management Plan and within this appendix.

D4. Definition of setting

The National Planning Policy Framework (2018) provides the following definition of setting:

‘Setting: The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral’.

This definition has been adopted, and National Planning Policy Guidance (NPPG) elaborates on that definition (see Appendix B – Legislation and Policy Context).

The definition of setting in current practice is therefore founded on the concept that it is not merely the physical aspects of a heritage assets which are important, but its immediate context, relationship to environs, and the experience of that asset in the round can all also contribute to substantially to its significance.

D5. Methodology

This analysis of setting has been developed with reference to HE Setting Guidance (2017) (see Appendix B – Legislation and Policy Context). The guidance sets out a four-stage process for addressing potential impacts of development on the setting of heritage assets.

This analysis has addressed Stages 1 and 2 only, as the remaining stages are not relevant.

- Stage 1: Identify the historic assets that might be affected by a proposed change or development
- Stage 2: Define and analyse the settings to understand how they contribute to the significance of the historic assets and, in particular, the ways in which the assets are understood, appreciated and experienced
- Stage 3: Evaluate the potential impact of a proposed change or development on that significance
- Stage 4: If necessary, consider options to mitigate or improve the potential impact of a proposed change or development on that significance

In terms of developing the analysis the following activities have been undertaken:

- Review and analysis of existing documentation including:
 - ◊ WHS Management Plan (2014)
 - ◊ Evidence provided for the Chiswick Curve Inquiry (2018)
 - ◊ World Heritage Site Inscription and Nomination documentation
 - ◊ World Heritage Site Conservation Plan (2002)
 - ◊ Conservation area Appraisals produced by London Borough of Richmond upon Thames
 - ◊ Listed building, scheduled monument and Registered Historic Park and Garden designation descriptions
- Analysis of historic maps and plans
- Site visits to the WHS and its environs

The analysis of setting was undertaken in consultation with the WHS Steering Group.

D6. Buffer zones and setting

Buffer zones are identified in the Operational Guidelines for the Implementation of the World Heritage Convention (2017) as an optional measure for protecting the OUV of World Heritage Sites. Not all World Heritage Sites have a buffer zone nor do all sites require them. As set out in the Guidelines:

‘103. Wherever necessary for the proper protection of the property, an adequate buffer zone should be provided.

104. For the purposes of effective protection of the nominated property, a buffer zone is an area surrounding the nominated property which has complementary legal and/or customary restrictions placed on its use and development to give an added layer of protection to the property. This should include the immediate setting of the nominated property, important views and other areas or attributes that are functionally important as a support to the property and its protection. The area constituting the buffer zone should be determined in each case through appropriate mechanisms...’

In England, National Planning Policy Guidance on Conserving and Enhancing the Historic Environment provides further guidance on ‘How is the setting of a World Heritage Site



Key

Royal Botanic Gardens, Kew
WHS Boundary

WHS Buffer zone

Figure 2: Royal Botanic Gardens, Kew local environs © Chris Blandford Associates

protected?', stating in paragraph: 033 (Reference ID: 2a-033-20140306):

'The UNESCO Operational Guidelines seek protection of 'the immediate setting' of each World Heritage Site, of 'important views and other areas or attributes that are functionally important as a support to the Property' and suggest designation of a buffer zone wherever this may be necessary. A buffer zone is defined as an area surrounding the World Heritage Site which has complementary legal restrictions placed on its use and development to give an added layer of protection to the World Heritage Site. The buffer zone forms part of the setting of the World Heritage Site.'

It may be appropriate to protect the setting of World Heritage Sites in other ways, for example by the protection of specific views and viewpoints. Other landscape designations may also prove effective in protecting the setting of a World Heritage Site. However it is intended to protect the setting, it will be essential to explain how this is to be done in the Local Plan.

Decisions on buffer zones are made on a case by case basis at the time of nomination and reviewed subsequently through the World Heritage Site Management Plan review process. Proposals to add or amend buffer zones following inscription are submitted by government for approval by the World Heritage Committee who will consider and adopt the proposals as appropriate.'

It is important note that a buffer zone, if present, does not necessarily incorporate all aspects of the setting of a WHS and change outside a buffer zone can still affect the setting and OUV of a WHS.

The existing buffer zone for the Royal Botanic Gardens, Kew WHS incorporates areas of land immediately associated with the WHS, but does not incorporate all areas of land that relate to the setting of the WHS or all areas of land where change could affect the setting and OUV of the WHS (see section 1.2 and Figure 2).

D7. Description of setting

This section describes and outlines each of the key elements of the setting of the Royal Botanic Gardens, Kew. It describes the key characteristics of the site's setting, including the settings of keynote buildings within the site, and outlines how each aspect contributes to the OUV of the WHS.

D8. Overview of the key elements, characteristics and attributes of RBG Kew's setting

The unique history of the Royal Botanic Gardens, Kew (see Section 2.1 and Appendix C) has created an extraordinary landscape, treasured by the people who live nearby, work, study and volunteer there, and who come to visit.

The landscape of the Gardens has its roots in the early history of the English landscape movement, and although suburban development has washed up against its walls to the east and the north, the site retains its rural/pastoral aspect, actively

supported by the Thames and the parkland to its west and south and by the relative lack of intrusion from the urban environment around it. It is a place where people can encounter nature in both its managed and more wild forms. Now, more than ever before in its history, RBG, Kew is *rus in urbe*; in this case, the artfully contrived and very exotic 'countryside in the city'.

Whilst the gardens at Kew have undergone successive changes, key to all these designs has been the artful articulation and re-articulation of the relationship between the site and its environs. Some of these were radical changes, such as Bridgeman's Richmond Garden built for his patron, Queen Caroline, and Frederick and Augusta's theatrical gardens, designed by William Chambers. Whilst both had much smaller historic gardens at their core (the Capel family's gardens at Kew and the Duke of Ormonde's gardens at Richmond), both massively extended their land holdings and built new gardens out of what had been a landscape of agricultural fields (see illustrations 1a, 1, 5 and 6). Similarly, George III's commission for 'Capability' Brown swept away Caroline's garden and entirely replaced it with his own design (see illustrations 2 and 4). Later changes used the existing landscape design as a foundation over which to overlay their own designs, such as Burton and Nesfield's design of the new Victorian Royal Botanic Gardens and National Arboretum (see illustrations 3 and 7). Modern landscape design has been more localised in its scale, working within the existing landscape framework.

Through these almost three centuries of landscape change, the Gardens' various designers have cultivated the enclosed and separate character site through consciously working and reworking the details of the relationship between the changing site and its environs. Various design devices have repeatedly been employed to strong and lasting effect, ranging from the specific locations of pathways and follies, to the creation of land formations, views and vistas, gateways, barriers and boundaries. In some instances, an Arcadian setting has been drawn into the gardens, so as to make the gardens appear larger – e.g. the relationship with Syon Park and the Old Deer Park. In other instances, the desire has been to control the view, shutting out urban views to reinforce the rural, exotic and 'otherworldly' aspects.

These recurring design elements include:

- i Strong sense of enclosure and separation
- ii Views and vistas
- iii Walks, promenades and routes
- iv Bounded areas of openness and 'big sky'
- v Defined relationships with the outside world (e.g. with River Thames; Kew Green and Old Deer Park)
- vi Entrances and exits

These and other characteristics and attributes of the WHS's setting are described in the next sections.

D8 (i). Strong sense of enclosure and separation

The Royal Botanic Gardens, Kew are a place apart; designed





Illustration 1: 1771 'Plan of the Royal Manor of Richmond' by Burrell and Richardson. Image courtesy of RBG Kew Archive

This plan shows the two royal gardens just before Augusta died in 1772 and after George III had inherited Richmond. Kew Gardens have been completed by Augusta and, in Richmond, 'Capability' Brown has re-landscaped the park for George III. The high walls of Love Lane are still in place, dividing the two gardens.



Illustration 2: 1837 'Royal Gardens, View'
Image courtesy of the PRO

This plan shows the two gardens after George III demolished Love Lane and brought Richmond and Kew Gardens together for the first time. It also shows Kew Green after the section in front of Kew Palace was enclosed by Parliament by the request of George IV. The Great Lake has largely been backfilled. This plan shows how the gardens looked prior to the work of the Hookers, Burton and Nesfield.

Illustration 3: 1861–1871 1st Edition Ordnance Survey map. Image courtesy of the British Library



This map shows the Royal Botanic Gardens and National Arboretum (still separated by a wire fence) after the reorganisations ordered by William Hooker and designed by both Burton and Nesfield. Turner and Burton's Palm House has been constructed along with Burton's Palm House Pond and Nesfield's parterres, and the lines of Burton's Broad Walk and Little Broad Walk can clearly be seen. The Great Lawn can be seen surviving as an open area within the Kew Palace Grounds and in front of the Orangery. The elaborate Herbaceous Ground is in the process of being changed to the new, more linear, Order Beds.

Illustration 4: c.1794 'A Plan of Richmond and Kew Gardens'.
Image courtesy of the British Library.





Illustration 5: 1763 'A View of the Lake and Island, with the Orangery, the Temples of Eolus and Bellona, and the House of Confucius' by William Marlow.
Image courtesy of the Orleans House Gallery, Richmond Borough Council.

This image was included in William Chambers' book of Kew Gardens, showing how his architectural designs fitted into the wider landscape. The Temple of Aeolus can be seen on its mound (known variously as the Cumberland Mound and the Laurel Mount), overlooking the Great Lake. The Orangery can be seen at the northern end of the Great Lawn, with a clear partial view of the building across the lawn between the Orangery and the Lake. The buildings are each surrounded by the trees planted at the edges of Kew Gardens to create an internally referencing and internally focussed garden, that closed out the world outside.



Illustration 6: 'A Perspective View of the Palace from the Northside of the Lake, the Green House and the Temple of Arethusa, in the Royal Gardens at Kew' by William Woollett.
Image courtesy of the Orleans House Gallery, Richmond Borough Council.

This image shows the Orangery partially visible across the Great Lake and the Great Lawn, illustrating the open character of this northern end of Frederick and Augusta's Kew Gardens, all contained within a thick boundary planting of trees. Note also that the people in the picture are not following formal paths but are wandering at will across the grass.



Illustration 7: Great Palm House, Kew Gardens.
Image courtesy of the Orleans House Gallery,
Richmond Borough Council.

This image is not drawn to perspective and is instead a collage of the features of Hooker's new Royal Botanic Gardens that would appeal to the Victorian visitor. Burton's Broad Walk across the Great Lawn was an important feature, as were the Palm House, Pagoda and Queen Caroline's Cottage. In the mind of the artist these features were all contained within strong boundary plantings of trees, reinforcing the sense of Kew as a place set apart from the everyday.

over several centuries to be appreciated from the inside and separated from the everyday, and increasingly urban, landscape outside.

Prior to becoming a public garden in 1841, the origins of RBG Kew variously lie in two large Georgian royal gardens; royal palaces; royal kitchen gardens, and private houses for courtiers and the wider royal family – all of which demanded a high level of privacy from the public eye. Even the areas of the Georgian landscape that theoretically were open to public view, such as along Queen Caroline's river terrace (open to the Thames towpath), were protected from being seen by most of the lower levels of the London populace by the distinct social barrier of lack of transport to Kew. As such, the royal gardens were made even more private by being set within the rarefied wider landscape of the highly exclusive rural settlement of royal Kew.

This desire for separation is particularly noticeable along the Kew Road where, since at least 1762 (see Illustration 1a and Figure 3), this side of the Gardens was enclosed within walls, even though the outside world of fields and orchards was far different to the busy, suburban landscape of Kew Road today. Princess Augusta, working with William Chambers as her designer, had expanded the Georgian Kew Gardens to fill the space between two thoroughfares, Love Lane and Kew Road, and the boundaries alongside both were defined with high walls and dense boundary plantings. The walls, shrubs and trees purposefully defined and protected a carefully designed, highly staged and deeply private, inward-looking world of royal wealth and exotica. The outside world was not to look in, but equally the inside world was not to look out. Expansive views were kept purely within the confines of the gardens (e.g. see Illustrations 5 and 6); these gardens did not borrow from their surroundings but carefully and firmly shut them out. Great effort was made to avoid puncturing the magical spell of the designed garden, with the elaborate Ruined Arch and associated earthworks installed by William Chambers as a means of providing access for livestock to the gardens, without allowing views to penetrate between the inside and the outside world.

Victorian RBG Kew inherited clearly defined boundaries along Kew Green and the increasingly urban Kew Road, made up of brick walls and the public facades of private houses. Sir William Hooker, the first Director, also inherited a wooden fence running the length of the boundary between RBG Kew and the Old Deer Park. The Victorian attitude towards the boundaries at RBG Kew reveal a strong set of values, which still heavily influence the boundaries today. To the northwest, north and east, William Hooker, and later his son, Joseph Hooker, strengthened the boundaries, shutting out ever increasing urban development – both industrial and residential. To the south, where the view across the Old Deer Park was more pastoral, Hooker opened up the view, removing the wooden fence and replacing it with a ha-ha and railings.

In doing so Hooker had to address a public campaign to remove the walls (starting in 1844), described by the Vicar of Richmond as being similar to 'the prison at Clerkenwell' (Desmond 1995, 236). Following the heightening of the

walls between the Cumberland and Unicorn Gates in 1877 the Kew Gardens Defence Association was set up with two objectives: the opening of the Gardens at 10am and the removal of the Kew Road boundary wall. They were not successful and RBG Kew retained its historically enclosed character and its sense of 'otherworldliness', distinct from the outside, increasingly suburban, world.

As Victorian Brentford developed its industrial economy, RBG Kew instigated a policy of planting carefully placed screenings of trees alongside the Thames, on the Brentford Aits and even in Brentford itself, to prevent views of the docks, shipping yards and the new railway station from interfering with the design intent of the landscape inside RBG Kew. This was not always successful, with views of the gasometer being very prominent from inside RBG Kew and from Kew Green until c.1990.

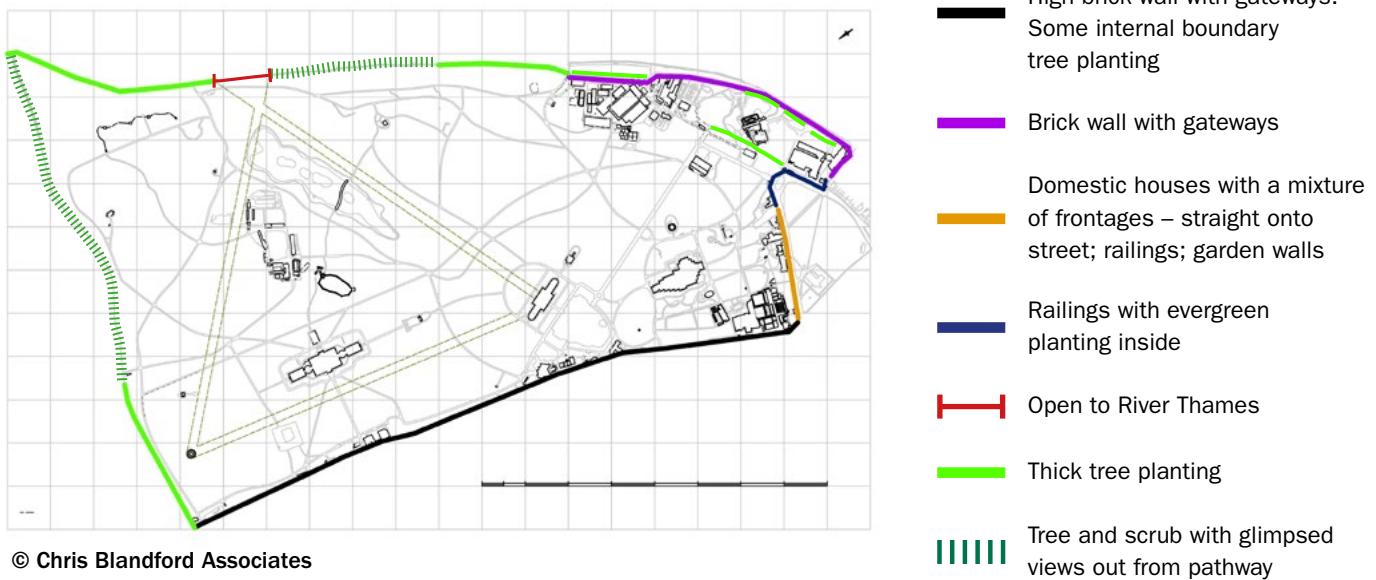
To the south, heavy evergreen planting behind the Pagoda has re-enclosed the exotic building within RBG Kew with no ground-level views out, and within the woodland garden the boundary has become overgrown with regenerating trees and shrubs, with only glimpsed views out across the golf course – here, nature is being left to slowly enclose RBG Kew again.

These historically developed walls, building facades and tree plantings around RBG Kew's western, northern and eastern boundaries all still exist today (see Figure 3), providing a distinct and strongly identifiable boundary between inside and out, and are a key feature of the character of the gardens and their presence continues a fundamental aspect of RGB Kew's setting; namely the exclusion of the urban world from views and experiences within the gardens. The relatively domestic scale of development around the WHS supports this key aspect of setting by restricting potential visual intrusion into the WHS and enabling us to still appreciate and experience the original design intent of the landscape. Although as set out in Section 13 there are a number of developments that are adversely affecting this aspect.

Separation and enclosure is also achieved through the careful control of ground level views in and out (see Figures 4 and 5). The most expansive ground level view out of the gardens is at the end of the Syon Vista, across the Thames to the 'Capability' Brown designed Arcadian landscape and classical buildings of Syon Park; the very opposite of an everyday, mundane landscape. Other outward views are carefully controlled at the formal entrances to the gardens.

Views into the designed landscapes of the gardens are also carefully controlled, mostly screened by trees and walls. The views into the landscape that do exist are largely at the entrances, or from the Thames path; particularly at the end of the Syon Vista. Ancillary functional areas of Kew are however more visible, for example the greenhouses seen from Brentford and the Thames path or glimpses of the roofs of laboratories seen over the wall along Kew Road.

Figure 3: Boundary types



The sensation of being in a magical world set apart from the mundane urban world outside is reinforced by the naming of features in the garden. The only built or landscape elements named after features directly outside the gardens, located in its setting, are the Victorian Syon Vista, and some of the gates on the western/Thames side of the gardens (the Brentford Gate and the Isleworth Ferry Gate). These gates and the Syon Vista are all referencing the Thames, which is an important Arcadian feature running alongside the gardens, and conceptually integrated into the gardens at the end of the Syon Vista. This of course stems from 'Capability' Brown's courageous use of the Thames as part of the George III's garden, leaping not only the fence but the entire river to create an enormous park out of two distinct gardens, and which was retained by Nesfield and Hooker in the next century. All three of these names were applied to these features during the Victorian period, illustrating an interesting tension as the gardens become more public, between referencing outside features on the one hand, and screening out Brentford on the other.

As RBG Kew is such a flat site set within a wider suburban landscape of generally low-rise housing, the outside world does not often visually impinge into the bounded landscape contained within the walls and trees. When it does, and tall buildings are seen breaking the skyline or tree canopy, it disrupts the design intent and enclosed character of the site. It also compromises our ability to appreciate the significance of the historic landscape, breaking the spell that Kew casts by bringing the everyday urban world inside the walls.

Future changes negative may also occur as a result of tree loss due to extreme weather, disease, lightning, age, structural conflicts with buildings etc. These changes would potentially reduce screening and affect the experience of areas the Gardens.

Contribution to OUV

In its development from a private royal retreat and pleasure ground, to a national botanical and horticultural garden open to the public, to a modern institution of conservation ecology, the successive landscape designers, their patrons, and the directors at RBG Kew have carefully retained and enhanced the sense of separation and enclosure at the site; it is a key aspect of the design intent of the gardens. The retention of this sense of enclosure also enables visitors to view Kew through the same lens as its earlier patrons and designers. This aspect of setting facilitates the understanding of the royal gardens and reinforces an appreciation of its historic role as a rural royal retreat.

This aspect of setting therefore makes a direct contribution to the OUV of the site, in particular in the following ways:

a) The OUV of the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century garden design, and the influence of the site in diffusing these ideas around the world. The retention of the secluded otherworldly qualities of the site and its heavily mediated relationship with the Arcadian Thames conserves key elements of the Georgian experience, as designed by their leading, internationally renowned, landscape architects for their royal patrons. This enables the appreciation and understanding of the roots of the site in the rural royal retreat it was built to be, and of the artistic expression of the English Landscape Garden, which these gardens made so famous and which was much emulated (relates to Criteria ii and iv).

b) Additionally, later designers (inc. Decimus Burton) and directors at the gardens maintained this sense of separation and enclosure as a key aspect of their designs and the experience of Kew (relates to Criteria ii and iv).

Boundaries



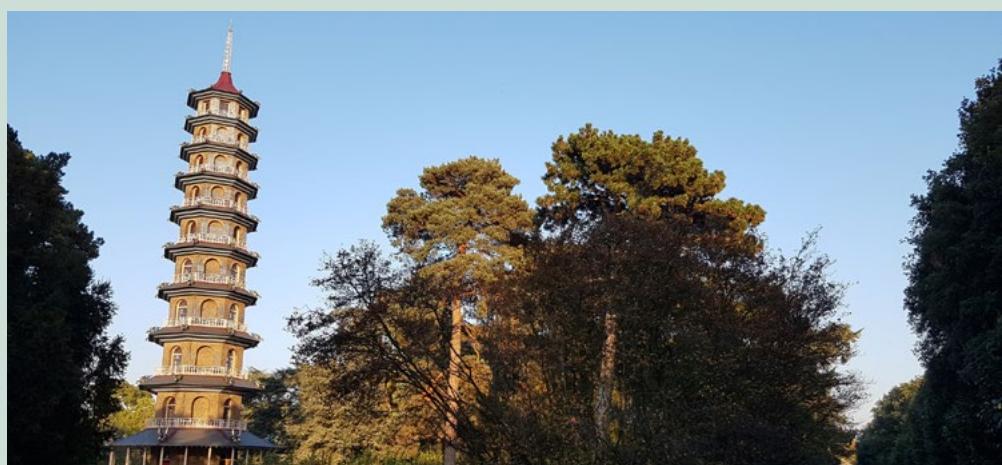
Kew Road wall alongside the Unicorn Gate



High walls alongside Victoria Gate

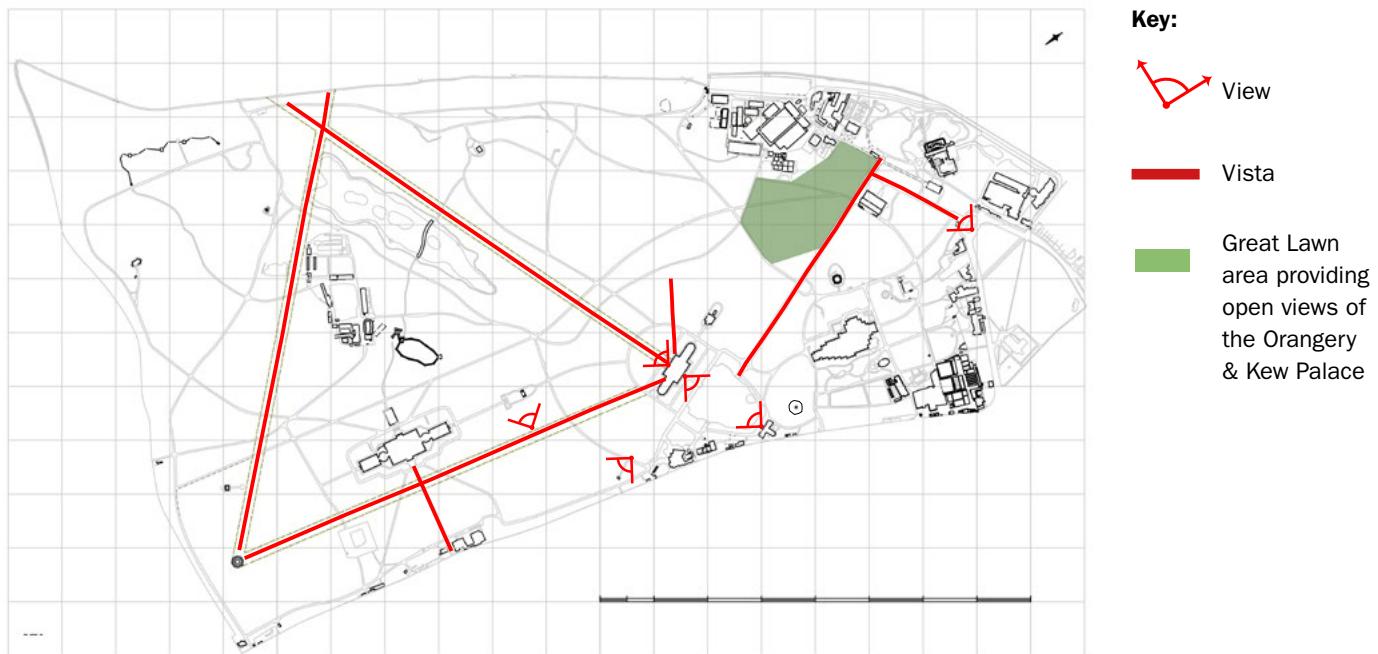


View of Kew Road walls looking across Order beds



High evergreen trees shielding Pagoda from Old Deer Park

Figure 4: Historic formal or designed views and vistas



© Chris Blandford Associates

The enclosure of the site is a key conservation measure for the protection of the internationally scientific collections housed at the site, particularly ensuring the security of the living collections housed in the open at the site (relates to Criteria ii and iii).

D8(ii). Views and vistas

Views and vistas within Kew's designed landscapes take three basic forms (see Figure 4):

- 1 Intended views to and from the sequence of follies, buildings, mounds and landscape features across the 18th-century Georgian designed landscapes of Bridgeman and 'Capability' Brown's Richmond Garden and Frederick and Augusta's Kew Garden, created with the help of Chambers and Kent.
- 2 Views along and from the formal vistas and walks of Burton and Nesfield's 19th-century Botanic Garden and views of keynote Victorian buildings
- 3 Defined views into (and out of) the Gardens on approaches to and around the gates.

(1) Intended views to and from the sequence of follies, buildings, mounds and landscape in 18th-century Georgian Richmond and Kew Gardens

The Georgian Richmond and Kew Gardens included a series of theatrical set pieces; follies to be looked at, and from which one could look out at the landscape. Examples of these include partial views of the Orangery across the Great Lawn, views down the lawns towards the Pagoda, views from and to the Temple of Aeolus and mound and the views out from the riverside terrace and later pastures of Richmond Gardens. Some of these have changed or been lost with the evolution of the Gardens in the 19th and 20th century but many remain.

Decimus Burton was concurrently developing plans for the development of the herbaceous grounds area following their transfer to the Botanic Gardens.

Although many of these views were essentially internal, i.e. from one place in the gardens to another, the backdrops of the views are still important in terms of providing a clear framing for the view and an uninterrupted terminus.

Both Richmond and Kew gardens also had viewing mounts – of which only the Temple of Aeolus mound in Kew Garden survives complete. This elevated platform with its classical folly provided a prospect of Kew Gardens, with its lake, follies and distant Pagoda. This elevation was important in an essentially flat landscape. The opportunity for views afforded by the mound were later reimagined by Decimus Burton who re-established a Temple on the mound (the current structure) and opened it up to the public, providing views over the newly emerging botanic gardens and the area soon to be occupied by the herbaceous grounds and later the Order Beds¹. Views from the Temple are therefore significant in terms of understanding and appreciating both the early Kew Gardens and later Botanic Gardens.

Richmond Garden designed for Queen Caroline by Charles Bridgeman and William Kent differed from Kew Garden in one key regard – Caroline's garden had a famous terrace built alongside the Thames by Bridgeman, incorporating the river into her garden. Open to the river, the Thames path outside the garden was used for viewing into the garden, with courtiers and the wealthy watching races along the Terrace, however, it must be remembered that this was a highly exclusive area and so public access to the river here was limited by geography and highly stratified social barriers.

The Victorian gardens struggled with the industrialisation of Brentford, so sought to shut out its visual influence by thickening the planting alongside the Thames, fundamentally altering the relationship between the gardens and the Thames. This process is described in more detail below. The sole survivor of this once-open Georgian vista of the Thames

View and vistas



View of Queen Elizabeth Gates along the Little Broadwalk
© Chris Blandford Associates



Museum No 1 across the Palm House Pond
© Chris Blandford Associates



View of the Pagoda down the Pagoda vista



The Broadwalk

is the carefully and intentionally retained view of Syon Park at the end of the Syon Vista.

(2) Views along and from the formal vistas and walks of Burton and Nesfield's 19th-century Botanic Garden and views of keynote Victorian buildings

During the Victorian reinvention of the site, Hooker oversaw the process of tree planting (for botanical purposes) across most of the landscape of RBG Kew, including expanding already wooded areas, such as Capability Brown's woodland blocks and Augusta's arboretum; a process that has continued to the present day. To give structure to this increasingly wooded landscape, Nesfield laid out two vistas within the Victorian National Arboretum to visually tie them into his garden around the new Palm House, giving a strong form and legibility to the landscape. In the original 1845 Nesfield design, the Syon Vista and the Palm House Vista converged on the patte-d'oie garden behind the Palm House. This design was such a success that the (now degraded) Minor Vista was added later, as was the Cedar Vista (1871). These formal vistas are key element of the site's visual and historic structure (see Figure 4).

Burton's 1845-6 Broad Walk also acts as a vista, channelling the gaze between the Palm House and the densely planted urn (in the Broadwalk roundabout) that acts as an eyecatcher at the north of the walk. The Orangery also plays an important role in drawing the eye along the Boardwalk when moving from the Palm House to Queen Elizabeth Gate. Burton's Little Boardwalk offers a final defined vista to and from the gate.

These Victorian vistas are mostly inwardly referencing, converging on the Palm House. The Pagoda Vista has its terminus in the Pagoda with its evergreen planting behind, shielding out the Recreation Ground in the Old Deer Park. The Cedar Vista and Syon Vista both have their terminus in the open grassland beside the Thames with its view of Syon Park. However, Syon Park is mostly not visible from the Cedar Vista due to the angle of the Vista and is only visible as the Vista emerges into the open grassland. Syon Park is more visible from along the Syon Vista, but again, the visitor has to travel a considerable way along the vista, almost to the end, to realise that one is seeing a distant view outside of RBG Kew.

As set out below some of these key 19th-century vistas and walks have been adversely affected by modern development.

As well as the major vistas the 19th-century redesign of the Gardens also created a number of key views of major buildings and pre-existing temples/follies in the landscape. These included the formal views of the Palm House over the Pond from the surrounding area and importantly the Museum to the south; the defined vista from the Temperate House to Queen's Gate (and vice versa); the formal views of Elizabeth Gates from the approach on Kew Green and views of numerous temple and follies (some relocated).

(3) Defined views into (and out of) the Gardens on approaches to and around the gates

Overlaid over this historic landscape of two private royal gardens is the Victorian scientific botanic garden and

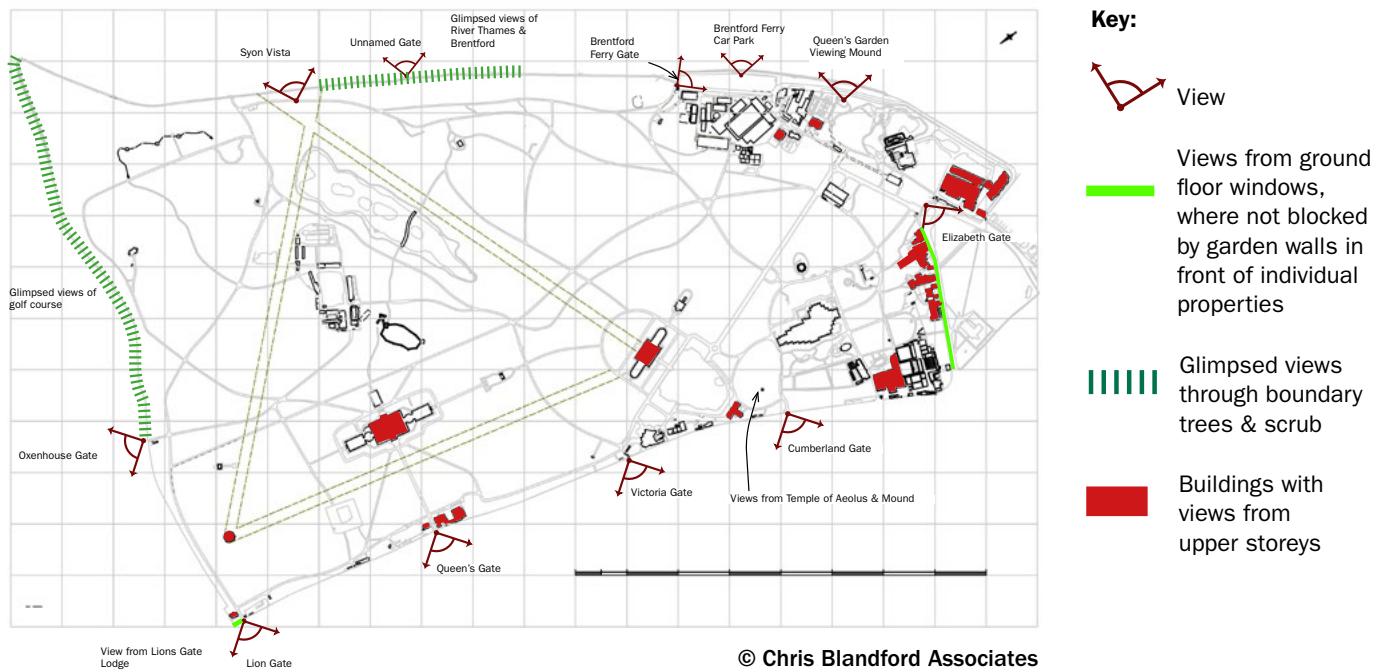
arboretum. This landscape had a presumption of public access. To facilitate this access, a series of gates were installed around the perimeter of the gardens. Most, though not all, of these allow for defined views to be obtained inside and outside the gardens and are discussed in more detail below (also see Figures 1 and 5).

Contribution to OUV

Views and vistas have been keynote features of RBG Kew since the very earliest days of Bridgeman's gardens for Queen Caroline. The successive landscape designers at the site have used these tools to manipulate the experience of the gardens, with controlled internal views drawing their patrons into the magic of the gardens, and controlled views to the exterior, expanding the Arcadian landscape into a wider rural idyll.

In terms of the contribution to OUV, the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th and 19th century garden design, and the influence of the site in diffusing these ideas around the world. The views and vistas are keynote techniques of the successive designers who worked at RBG, Kew throughout the 18th- and 19th-century and illustrate significant periods of 18th- and 19th-century landscape design. Bridgeman's riverside terrace ingeniously opened the gardens to the river, which 'Capability' Brown later expanded by installing a feature invented by Bridgeman – the ha-ha – and so connected with the landscape he had already designed across the river at Syon Park. The celebrated Victorian designer, Nesfield, used this view again in his Syon Vista, the only landscape feature in the gardens that visually references a feature outside the boundaries of RBG, Kew, and which is named after it. The other 19th-century vistas and the Broadwalk(s) are important formal views designed to structure the experience of the Gardens. Similarly, the follies installed at both gardens by the Georgian architects William Kent and William Chambers, were carefully located to have appropriate backdrops and foregrounds – places to look at and to look out from (relates to Criteria ii and iv).

The use of these design techniques in the famous gardens at RBG Kew enabled their dissemination around the world, as key elements of the toolbox of the English Landscape Garden and later of high Victorian landscape formality. Their survival at RBG Kew also enables insight into the intentions of the successive designers, and the effects they were intending to create at Richmond, Kew and the newly formed RBG, Kew (relates to Criteria ii and iv).

Figure 5: Views out

D8(iii). Walks, promenades and routes

It is important to recognise that the experience of Kew is not a static one; it is not a series of individual views. All the phases of landscape design at the site since the 18th century have been dynamic in their intention – these landscapes are places to move within and to have experiences within. This combination of movement and separation from the outside world creates a dynamic internally focussed experience.

The dynamism of these experiences and views varied from the free-flowing to the fixed. For example, as described in Chamber's 1763 book on Kew, a walk wound its way through the woodland at the edge of Augusta's gardens, opening out at key locations to provide set views of follies in the landscape. Other walks were less prescriptive, such as the free-flowing movement across Frederick's Great Lawn captured in 18th-century illustrations (see Illustrations 5 and 6).

Bridgeman's Richmond Gardens for Queen Caroline also had a combination of walks and free flowing areas, and, being of a far larger scale, also had rides through wildernesses and across open grassland, and alongside the Thames on the Terrace. Capability Brown's design for Richmond Garden for George III swept away all formality, replacing it with yet more free-flowing rides and making even more of a feature of the Thames; this was a landscape for enjoying on foot and from carriages and horseback; not a landscape of fixed views and vistas.

The Victorian design for the Royal Botanic Gardens and National Arboretum added new formal elements to the landscape, with Burton's Broadwalk and Little Broadwalk intersecting at the Palm House with Nesfield's Syon and Pagoda Vistas while also retaining an emphasis on movement

(this time around collections and between buildings) and seclusion from the outside world. During this period Kew and Richmond Gardens were, for the first time, conceived of as an entire landscape. Visitor experience was structured by guidebooks and visitor itineraries; and undoubtedly people had favourite places to sit and see the view, but the landscape was designed to keep people moving – indeed, the Pagoda Vista was so popular as a walkway that consideration was given to graveling it in 1864. Promenading was a popular Victorian activity, and features such as the vistas and the formally planted Broadwalks were in high demand.

In the modern gardens these themes are still apparent, with visitors free flowing across grassland, through woodland and along set paths.

Contribution to OUV

Walks, promenades and routes are design techniques that are central to the toolbox used by the Georgian and Victorian landscape architects that were active at the site. The techniques are used to structure the experience of the landscape, from set pieces to view dynamically along a set walk, to the sense of freedom, adventure and personal agency obtained from moving freely around a three-dimensional and ever-changing landscape. These experiences can be private and personal, or performative, responding to the presence of others in the landscape, or a mixture of the two.

In terms of the contribution to OUV the RBG, Kew are internationally significant for the internationally renowned landscape architects that worked at the site illustrating significant periods of garden design in the 18th and 19th centuries, and for the diffusion of English Landscape Garden design approaches and techniques that flowed from this famous set of landscapes. The walks, promenades and routes employed at RBG, Kew as landscape tools by the internationally famous and influential Georgian and Victorian

Openness and ‘Big Sky’



The Sackler Crossing



The Temperate House



The Palm House, Parterre
and Rose Garden



Agius Evolution Garden

designers that worked there, are important elements of the toolbox of English Landscape Garden and formal high Victorian design. Their use at the famous gardens at Richmond, Kew and RBG, Kew, enabled their international dissemination, whilst their modern-day retention and conservation at the site enables us to experience the intentions of these leading designers (relates to Criteria ii and iv).

D8(iv). Bounded areas of openness and ‘big sky’

RBG Kew's current landscape is dominated by living collections, mainly trees. These limit views and create an enclosed/enveloping sense of place. Within this largely contained space, there are a group of landscape features that stand out as being more open; where ‘big sky’ is noticeable above your head and/or where there are strong internal views across the bounded open space, with their edges often defined by trees, walls, buildings or other planting. These areas are mapped on Figure 6 and include:

- The Great Lawn – surviving in a much-reduced form, this is a remnant of Frederick's garden and lay in front of the White House and the Orangery. Defined by trees, this was an enclosed area of open space, heavily separated from the world outside. The setting it provides for the Orangery is important.
- Palm House Pond, Rose Garden and terraces – the pond is a remnant of Frederick's much larger lake, redesigned by Burton to provide a formal setting for the Palm House. Together with the Palm House terraces and Rose Garden, this is a large area of openness within the popular heart of RBG Kew and a honey-pot for visitors, defined by trees and buildings. It also forms the core of the Palm House's setting. Located near to the boundary wall, the sounds of Kew Road penetrate the area around the Pond, particularly at quiet times of the day, and there are some glimpsed views of domestic buildings on Kew Road.
- Temperate House terraces – an open area around the Victorian Temperate House, defined by trees. This was designed to have one particular vista to Kew Road from the front door of the building and through the unused Queen's Gate, however, this vista has now been largely overgrown by the trees alongside it. Now the Temperate House is experienced as being enclosed within the private world of RBG Kew, within an open space defined by trees.
- Agius Evolution Garden – set hard against the wall alongside Kew Road the Evolution Garden is a highly defined open space marked on three sides by walls and buildings. Constructed by Decimus Burton from the internally open and well-defined space of the Georgian royal Kitchen Gardens, this area has a long-standing open character. The noise of Kew Road permeates the space but the gardens themselves are largely screened from outside development.
- Sackler Crossing – this is a recent intervention, designed to enable visitors to walk within the open space of the Syon Lake by crossing a low-lying bridge. This is a space heavily defined with trees, with views across the lake and to the sky above, but not to the world outside RBG Kew.

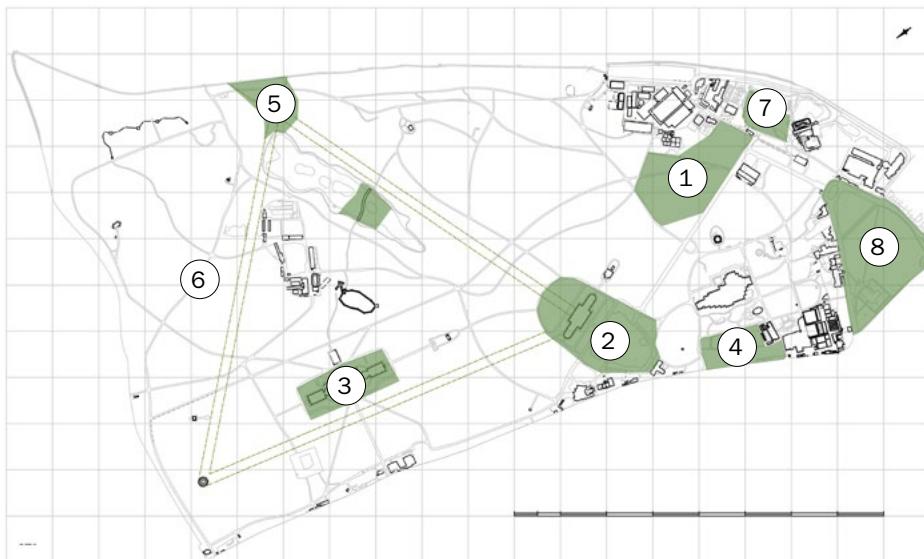
- Lawn between Kew Palace and the Joseph Banks Centre – this is an area of contemporary landscape design of open lawn and lakes defined by trees and RBG Kew's boundary wall, located between the modern Joseph Banks Centre and Kew Palace. Planes are particularly dominant in the sky in this area, loud and often low-flying. An area often used as an events space.
- Kew Green – This area lies partially within the WHS and partially within its buffer zone. The Green provides one of the key approaches to the RBG Kew (currently and historically) and its bounded openness is an important aspect of the setting of Kew. The area within the WHS provides an open and majestic setting for the Elizabeth Gate.
- There is also a unique landscape feature, where not only is the sky above your head exposed by an open area of landscape, but also where, very unusually for RBG Kew, views are intentionally obtainable to the world outside RBG Kew. This is:
 - The view of Syon Park at the end of Syon Vista – this open pocket of lawn at the head of the vista provides a real sense of the earlier, less planted, Capability Brown landscape. It is the last substantial remnant of the open relationship that Richmond Gardens once had with the Thames, through both the famous Terrace in Queen Caroline's garden and through Capability Brown's later visual unification of Richmond Gardens, Syon Park and the Thames in between into one seamless design. It is a key space in terms of maintaining and understanding the visual connections between RBG Kew, Syon Park and the Thames.

These open locales with their internal views are particularly vulnerable to intrusion from the outside world by the sight and sound of overhead aircraft, and by tall buildings breaking through, and above, the tree canopy, and shattering the sense of enclosure and separation. Notably, tall buildings can become more prominent with distance from Kew, due to sight lines.

Contribution to OUV

From the earliest Georgian designs at Richmond and Kew, through to the present day, areas of openness and ‘big sky’ have been used to great effect by designers, directly contrasting with areas of wooded enclosure. Over the past 300 years the site has become increasingly wooded in its character, as large areas of the site have been transformed into scientific arboreta. In the Georgian period both gardens were more open in character with distinctive areas of woodland planting. Where open Georgian landscape features, such as the Great Lawn and views towards Syon Park, have been retained by the Victorian design and beyond, they gain more significance by their rarity. Nesfield and Hooker used the contrast between enclosure and openness to great effect, as Victorian tree planting for the national arboretum was implemented, and 20th-century designers have followed their example, with the Sacker Crossing and the lawn near the Joseph Banks Centre.

In terms of contribution to OUV, site includes the work of internationally famous designers, illustrating significant

Figure 6: Open spaces

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periods in 18th- and 19th-century garden design, and the influence of the site in diffusing these ideas around the world. Successive designers have used the interplay between woodland enclosure and open space as a key tool in their creation of landscape experience at the Georgian Richmond and Kew Gardens and in the increasingly enclosed RBG Kew. Where the few areas of open Georgian character survive, these are made more significant for their rarity at the site, and for their value in appreciating the design intentions of the designers. Victorian manipulation of open space is more apparent at the site, and is an essential element of this phase of garden design. The intentional open space around the iconic glasshouses sets off these magnificent structures against their wooded wider backdrop, and the conservation of this space today enables a direct experience of the dramatic intentions of the designers.

D8(v). Defined relationships with the outside world – the Thames

RBG Kew is one of a series of parks and estates along the River Thames' south-western reaches. Its historic and modern relationship with the River Thames is an important aspect of its setting. The WHS intersects with the Thames along its western and northern edges and has quite a different relationship with the river in these two distinct areas. To the north and northwest of Kew's riverbanks, the urban development of Brentford is close by, on the other side of the river. To the west, views open out to the trees, grassland, natural beaches and historic buildings of Syon Park, and to the southwest, distant views to Isleworth. Along this part of the River Thames the dominant character is of villages and small towns, dotted along the river and separated by green swathes.

The westerly boundary of RBG Kew was once the westerly boundary of the historic Richmond Gardens. Here the relationship with the Thames was deliberately open during the Georgian period, first with Bridgeman's formal Terrace

Key:

- ① Great Lawn (Surviving extent)
- ② Palm House Terraces & Pond
- ③ Temperate House Terraces
- ④ Order Beds
- ⑤ Syon Vista Terraces
- ⑥ Sackler Crossing
- ⑦ Space between Kew Palace & Joseph Banks Centre
- ⑧ Kew Green

alongside the river for his patron, Queen Caroline, then 'Capability' Brown designed landscape and ha-ha for George III, using the Thames as the largest serpentine water feature to be found in any of his designs (see Illustrations 1, 2 and 4). Interestingly, the ha-ha was a landscape design feature invented by Bridgeman, that was used to great effect by the later 'Capability' Brown at this site and elsewhere.

The Victorian era brought a radical break from this open character, systematically closing RBG Kew off from the development of Brentford across the water. The first tree plantings in this stretch were implemented in 1862 in reaction to the new docks and railway terminus, with more plantings again in 1877, 1912 and 1913, and on the Brentford Ait in the middle of the river. In 1922, Kew was given permission to plant on the other side of the river on land adjacent to Brentford Dock, to camouflage it from Kew even further. The Victorians did, however, retain 'Capability' Brown's celebrated view to Syon Park, formalising it at the end of the newly planted Syon Vista, which survives today as a dramatically open area within RBG Kew's mostly closed off western boundary.

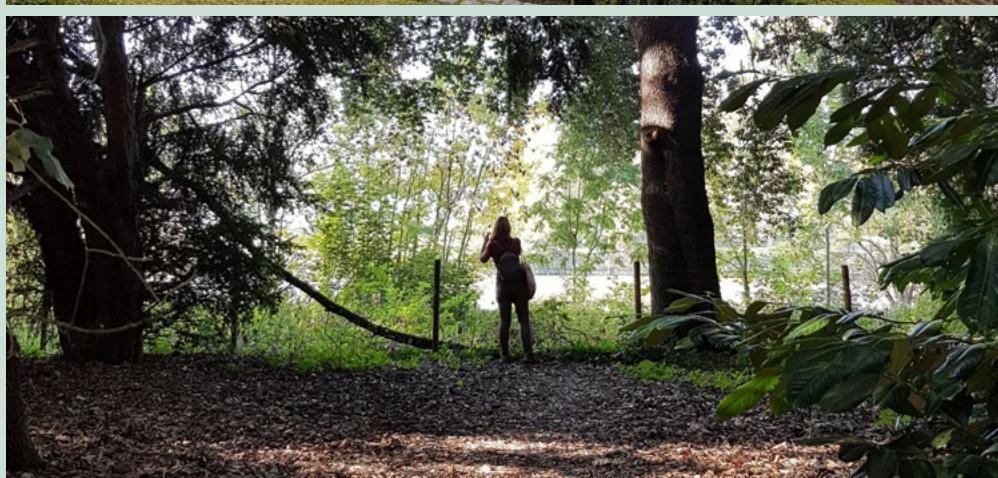
Today, the Victorian plantings along the Thames have been further reinforced by Oak Walk, a thick band of woodland and glades through which the visitor footpath winds, surrounded by trees. The Thames and tow path are glimpseable between the trunks of the trees in some places, and informal desire lines have been made by visitors to the more obvious glades to obtain views of the river outside. This sense of containment is dramatically ended by the sudden openness of the Syon view at the end of the Syon Vista, where the woodland walk ends, and both the sky and the Thames are suddenly visible. To the south of Syon Vista the pathway moves away from the Thames again and into the Woodland Garden, with trees again separating the gardens from the Thames.

Views of this Richmond Gardens side of RBG Kew from across the river are of a densely wooded river bank, with

Relationship with Thames



View of the Thames
from the Queen's Garden



View of the Thames from
glades alongside river



View of the Syon Park
from the end of Syon Vista



View from Kew Bridge of
RBG Kew (to left) with heavily
planted riverbanks and tree
plantings on ait (in centre)
blocking views of Brentford
from RBG Kew

an open area at the head of the Syon Vista. From the grounds of the hotel complex at Syon Park, and from specific buildings such as the Garden Room and Marquee, clear views can be obtained down the Syon Vista towards the Palm House.

To the north of RBG Kew, from the Brentford Gate onwards, the relationship with the river is quite different. Here, historically, private buildings stood alongside the river, whose banks were not as engineered as they are now. Some historic illustrations show the area covered by mature tree plantings, shielding the buildings from the Thames. With the exception of Kew Palace, Hunter House and some of the Kew Palace outbuildings, the historic buildings in this area have been demolished and replaced with more modern developments, including the low-lying Joseph Banks Centre.

Generally, in this area, the Thames is not a major feature of the garden's character. For visitors, views of the Thames are blocked by mature trees; the extensive Herbarium buildings and back-of-house Building Maintenance Yard and glasshouses (all of which are not accessible to the public); public and staff car parks and boundary brick walls.

The exceptions to this rule are the upper storeys of Kew Palace, where views of the river and of Brentford on the opposite bank are obtainable by the public, as they are from the belvedere viewing platform overlooking the Thames at the end of the Queen's Garden. For staff and visitors working in the Herbarium, the Thames is more of a feature of the RBG Kew landscape, visible from some of the upper storey windows. For those who arrive at the Brentford Gate, and/or park in the Brentford Car Park, the river is more of a feature of their visit, visible alongside them as they arrive and leave.

From the Brentford side of the river, views of RBG Kew are partially hidden by the trees on the aits, with woodland continuing along the riverbank to the south. Views directly across the river from Brentford show RBG Kew's back of house functions, with glasshouses and car parks clearly visible behind walls and trees.

Contribution to OUV

Built on a bend in the River Thames, Richmond Garden and the later RBG, Kew have a formative relationship with the river, which is a key influence in their design phases. The river has been embraced and later, in some areas hidden away, due to the urban development on the farther bank. The design intention with the Thames by successive designers has always been to increase the Arcadian and rural experience at the site, and so the relationship with the Thames been carefully managed to maximise this atmosphere whilst the setting around RBG Kew has historically changed.

In terms of contribution to OUV, the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century garden design, and the influence of the site in diffusing these ideas around the world. The relationship with the Thames epitomises the English Landscape Garden desire to leap the fence and see the whole world as an artfully designed garden; to borrow views and landscapes outside the boundary to increase the impact and atmosphere of the garden inside. The ha-ha

was a key tool to attain this goal, invented by Bridgeman and applied by 'Capability' Brown alongside the Thames. Planting for screening is also an important landscape tool, used to strong effect by the Victorians in managing the relationship with the Thames and conserving the Arcadian atmosphere of the gardens against an increasingly industrial and urban backdrop. Through the use of these tools, the famous and highly influential Arcadian landscape was carefully invented and conserved, so that we can now appreciate its atmosphere and the intention of its successive designers (relates to Criteria ii and iv).

D8(v). Defined relationships with the outside world – Kew Green

Kew Green lies partially within the WHS and largely within its buffer zone. Historically, Kew Green extended into the land now occupied by RBG Kew, leading up to the gates of Kew Palace. This land was enclosed by Act of Parliament in 1824 at the request of George IV, who had new gates and lodges constructed to the east of Little Kew Green, their position now marked by a line of lime trees (this marks the edge of the WHS). These buildings were soon demolished by George IV's brother, William IV, in 1831, after he became king, reopening Little Kew Green for public use once again.

This area was changed once more during Hooker's Victorian transformation of RBG Kew, becoming the new grand entrance worthy of the new national Royal Botanic Gardens, designed by Decimus Burton in 1846. Burton's imposing Portland stone pillars and wrought iron decorative gates and railings are a defining feature of the west end of Kew Green, with formal views both in and out of the gardens; in the latter case over Kew Green. Kew Green was, and continues to be, a defining feature of the approach to and exit from the RBG Kew. Its open 'village green' character contributing much to the sense of arrival and exit – creating a sense of entering somewhere different from the bustle of the metropolis.

It also forms a core element of the setting of a number of historic listed buildings that flank the southern edge of Kew Green and mark the northern boundary of the WHS. These were once private dwellings, many of which were occupied by the Hanoverian royal family e.g. Cambridge Cottage. These buildings and their private rear gardens were gradually brought into RBG Kew in the latter part of the 19th century. The properties were domestic and built to face onto Kew Green, semi-permeable to the public space in front of them. The pleasant public sphere of Kew Green with its open spaces and genteel and polite domestic buildings was their physical setting, the view from their windows and, indeed, their social *raison d'être*. Their public facades and garden walls now join together to form a single boundary for RBG Kew along Kew Green. Their public-facing front doors and the windows of their front rooms are both overlooking and overlooked by the open area of Kew Green, with views to other grand houses and the church of St Anne, extensively redesigned by Joshua Kirby at the behest of George III. In contrast, the rears of the houses overlook their historically private gardens, sheltered from public view by the houses and high garden walls, and overlooking historically private space.

Contribution to OUV

In terms of contribution to OUV, the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century garden design, and the influence of the site in diffusing these ideas around the world. Kew Green is the Georgian seed from which the Kew Gardens side of RBG Kew grew, enabling Frederick and Augusta to work with Chambers and Kent to create their exotic and magical masterpiece of landscape design. The surviving Georgian character of Kew Green illustrates the grand domesticity of this Georgian royal enclave. It is also the intended setting to foreground Decimus Burton's impressive and majestic entrance gates, from which lead his epitome of Victorian formal landscape design, the Little Broadwalk and Broadwalk promenades (relevant Criteria ii and iv).

D8(v). Defined relationships with the outside world – Old Deer Park

To the south of RBG Kew, the gardens sit alongside the Old Deer Park. Historically, the Richmond Gardens side of RBG Kew was united with the Old Deer Park forming part of the same Georgian landscape designed by Charles Bridgeman and William Kent, and later by 'Capability' Brown. They still form part of the same Registered Historic Park and Garden designation.

To the east, Kew Gardens have never extended into the fields next to the Old Deer Park (now the athletic ground) and have a long-standing historic boundary here.

Although the current landscape of RBG Kew is visually separated from the Old Deer Park by planting the relationship between the two areas is fundamentally important due to their shared evolution and development as historic designed landscapes in the 18th century.

Contribution to OUV

In terms of contribution to the OUV the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century garden design, and the influence of the site in diffusing these ideas around

the world. The landscape designs of Bridgeman, Kent and 'Capability' Brown at Richmond Garden encompassed the Old Deer Park in a much larger designed landscape. Over time the Old Deer Park was separated from Richmond Gardens due to royal gifting of land, but the open views were opened up once again by the Victorian William Hooker. Views into the Old Deer Park from RBG Kew reinforce the atmosphere Arcadian idyll created by the Georgian designers and reinstated by Hooker, and enable the modern-day experience of the rural peace that these designers were creating.

D8(vi). Entrances and Exits

RBG Kew has hosted public visits throughout its history, these grew exponentially in the 20th century as its mission to educate and inform became central to its purpose. In 2017, RBG Kew hosted c. 1.8 million visits in 2017 making it one of the UK's leading visitor attractions². Access to and from the site is, and has historically been, an important aspect.

To enable access, RBG Kew's boundaries are punctuated by gateways (historic and modern), some still in use, some closed; some used by visitors and others by staff, students and volunteers. Most gates are pedestrian, with a small number of modern-designed gates for vehicular access. Its gateways map a particular history of the changing uses of the site, with some, such as the King's Steps, referring to closed off pathways, and others falling out of use with changing modes of transport, such as the Isleworth Ferry Gate. The current active visitor entrances and exits at RBG Kew all date to the Victorian redesign of the landscape as the newly formed National Botanic Garden and National Arboretum.

Key gates include (see Figure 1):

- Elizabeth Gates – Decimus Burton's Main Gates (1846), now called the Elizabeth Gates, were designed to be the primary entrance to the site. As part of this design, the Broadwalk and Little Broadwalk were also laid out to create a grand promenade to the Palm House at the heart of the Gardens. The dramatic gateway with its curved railings and gilded wrought iron gates set between carved Portland



² In 2017 it was the 5th most visited fully paid attraction and the 14th most visited overall (based on attractions which are members of the Association of Leading Visitor Attractions) <http://www.alva.org.uk/details.cfm?p=423>



- stone pillars provides important views into and out of RBG Kew from Kew Green, with the Nash Conservatory being particularly prominent. The view out of the gate encompasses Hunter House and the Herbarium to the left, and the Georgian RBG Kew houses lining Kew Green to the right. In front of the gate the view extends across the grass of Little Kew Green, where the views are towards St Anne's church are seasonally restricted by the leaf of the avenue of lime trees.
- Queen's Gate – this gate on Kew Road was constructed in 1868 to be the main entrance from the proposed new railway station, with a wide pathway leading to the Temperate House. However, the location of the station was unexpectedly moved closer to Kew, rendering this gate useless and it was never opened for visitor use. Hooker apparently intended to close off the gate opening, however public pressure led to the gate being retained, and it survives as an important viewpoint into and out of RBG Kew.
- Cumberland Gate – this smaller gate on Kew Road, also built in 1868, unintentionally became the closest gate to the new station, and remained so until the Victoria Gate was opened in 1889. The Cumberland Gate is no longer in regular use but remains as an opening in the Kew Road wall, through which views into and out of the garden are obtainable through the wrought iron gates.
- Victoria Gate – is now the main visitor access gate for the gardens, aligning with the straight, tree-lined avenue of Lichfield Road, leading to Kew Gardens station. Impressive in their design and visible from quite a distance up Lichfield Avenue, the four wrought and cast iron gates from Coalbrookdale Ironworks hang between tall Portland stone pillars. Opened in 1889, this gate brings the visitor straight into the centre of the Victorian designed landscape. However, the views in and out of these impressive gates are restricted by the visitor infrastructure of ticket kiosks, the visitor centre building and by planting.
- Lion Gate – provides visitor access from Richmond and marks the southern extent of the Kew Road brick boundary wall. Here the setting for the gate from outside the Gardens is provided by the Lions Gate Lodge and its metal railings, which sit beyond the end of the Gardens' long brick wall. There is a linear long distance view into the Gardens from this gate, of a tree lined tarmacked avenue behind the

Pagoda, but the eye cannot roam as trees restrict the view in any other direction. The Lion Gate Lodge is also part of the setting of the Lion Gate from inside the Gardens, currently hidden behind incongruous lap fencing.

- Brentford Gate – opened to the public in 1847, was initially intended to serve ferry passengers, as was the Isleworth Ferry Gate (opened in 1872). However, visitor numbers to the Brentford Gate fell dramatically when the toll on Kew Bridge was abolished in 1873, with visitors instead preferring to enter by the Main Gates on Kew Green. Whereas the Isleworth Ferry Gate was eventually closed, the Brentford Ferry Gate has remained open, serving a riverside car park for visitors. Views into and out of RBG Kew from the car park and the Brentford Ferry Gate are very limited, due to the strong boundary tree planting in this area. The car park itself is very open to the river and to Brentford across the river, viewed through the trees planted on the aits.
- Oxenhouse Gate and the new Herbarium Gate – these vehicle gates are of modern design in black vertical metalwork and stand in contrast to the other gates on the site. The Oxenhouse Gate in particular is very visible at the southern end of the Gardens, providing views into and out of the Old Deer Park, and is currently visually intrusive and incongruous for the visitor. The Herbarium Gate is more hidden away from visitor view.

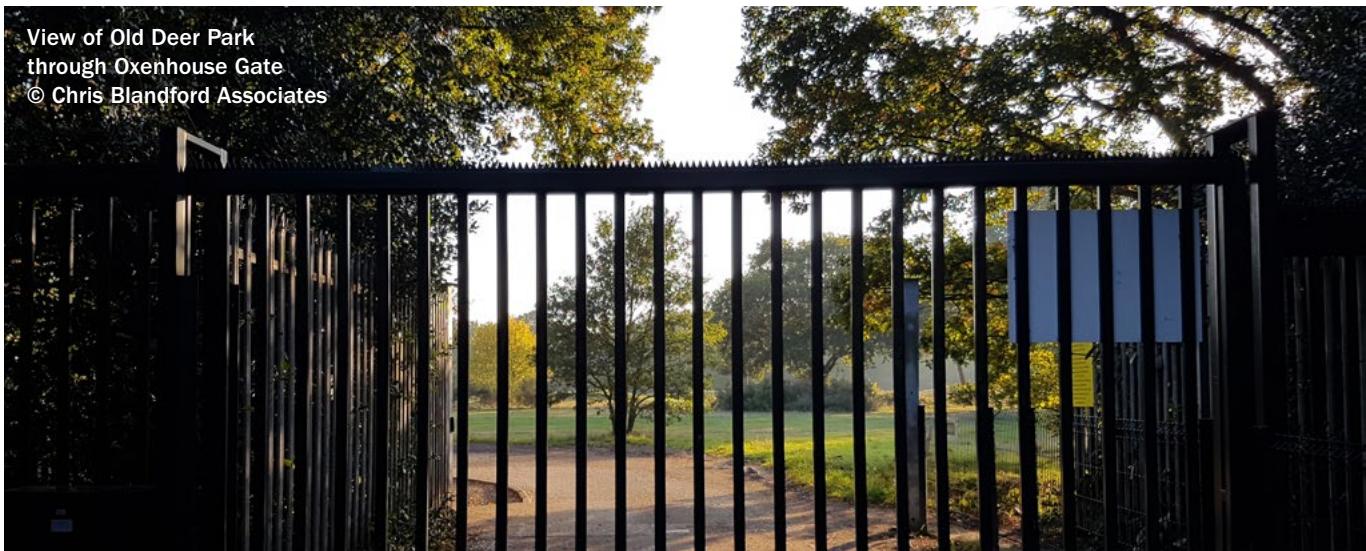
Staff and volunteers have a range of entrances and exits that are outside of the visitor experience, allowing permeability between RBG Kew and the outside world in a way that the visitor does not experience. These gateways tend to be solid in design, not allowing views in and out, but are no less significant as they help structure the daily experience of staff, volunteers and students. Such gateways include the doors to the once-private houses lining Kew Green and reinforce the important historic permeability between the house fronts on Kew Green, and the Green itself.

Contribution to OUV

The entrances and exits directly contribute to the OUV of RBG Kew in the following ways:

- The OUV of the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century garden design, and the influence of the site in diffusing these ideas around the world. The key gates at the site all date to the Victorian

View of Old Deer Park
through Oxenhouse Gate
© Chris Blandford Associates



- opening of the site as a visitor attraction, for educational, scientific and leisure purposes. The gates have been intentionally placed with reference to the internal and external landscapes, and several were designed by the Victorian Decimus Burton with associated landscape design (relevant to Criteria ii and iv).
- The Victorian creation of a series of gates is a physical expression of the increasingly public nature of RBG Kew's scientific mission, and its dramatically growing relevance to Victorian society and across the world (relevant to Criteria ii and iii).

D9. Setting of individual buildings

Many of the buildings in the WHS make a direct and considerable contribution to its OUV, in including the great glasshouses, Palm House, Temperate House and the Princess of Wales Conservatory; and other buildings that relate to the site's royal connections, time depth and historic landscape development, including Kew Palace, Pagoda, Temple of Aeolus and the Orangery (see Figure 1 for locations). Other historic buildings on the site are also note such as the former museums, numerous follies/temples, buildings along Kew Green, the historic gates and historic ancillary buildings such as the lodges, the Herbarium, laboratories etc. The setting of these buildings makes a contribution to their significance and consequently changes to their setting can also affect the OUV of the WHS.

This study does not provide a detailed analysis of the setting of all the historic buildings in the WHS, future change within and outside the gardens will need to be cognisant of the setting of individual buildings and address potential impacts on that setting and significance.

The following provides a summary of the high-level characteristics of the setting of the following keynote buildings to support ongoing management and development planning: Palm House, Temperate House, Princess of Wales Conservatory, Kew Palace, Pagoda, Temple of Aeolus and the Orangery.



1) Palm House (Grade I Listed)

The Palm House was, and still is, a visual, architectural and scientific icon for the WHS. The proposed location of the Palm House was a much-debated concept until it was placed where it stands today, in the heart of Prince Frederick and Princess Augusta's Georgian garden. Its ultimate location was chosen so that the building would proudly visible, at the request of Queen Victoria. The Palm House was subsequently used as the key lynchpin for Burton's design of the Royal Botanic Gardens, and for Nesfield's slightly later design of the vistas through the National Arboretum. The Palm House is truly the centrepiece for the Victorian gardens and remains so today.

The setting of the Palm House has a number of key elements:

- The immediate physical setting of the architectural form of the Palm House, with its nearby formal gardens and longer vistas;
- The historic conceptual setting of the Palm House as the lynchpin in the Victorian landscape design, from which both Burton's and Nesfield's designs flow;
- Its physical location in the heart of the Georgian Kew Gardens, surrounded by surviving Georgian garden features;
- Its conceptual role as the icon of the Royal Botanic Gardens, Kew, sitting in its immediate formal setting;
- Its conceptual role as the physical compass by which visitors psychologically orient themselves during their visits to the gardens, aided by the rays of Nesfield's vistas, and a key destination honeypot; and
- Glimpsed views of the Palm House from many locations around the Gardens, at the centre of Nesfield's vistas and at the edge of the relatively open area of the historic Great Lawn, including views from its sister glasshouse, the Temperate House.

2) Temperate House (Grade I Listed)

Alongside the Palm House the Temperate House is an icon for the WHS. Its sheer scale and size marks it out amongst the glasshouses on the site and this is accentuated by



The Palm House across the Pond



Kew Palace in the snow

its elevated position on a raised formal terrace. It is an imposing piece of architecture particularly in views of its eastern façade.

Views of the western façade are more cluttered by the later Australian/Evolution House. Its setting has a number of key elements:

- Its dominant form on the elevated terrace alongside the Pagoda Vista (particularly in views from the east, northeast and southeast);
- The designed vista from its eastern door towards the Queen's Gate (and visa versa);
- Views from the upper balcony over the gardens, including a visual relationship with the Palm House to the north;
- The open space around the building and terraces which enables appreciation of its form and scale; and
- Glimpsed views of glasshouse from locations in the southern part of the Gardens.

3) Princess of Wales Conservatory

The Princess of Wales Conservatory (PoW) is the most recent of the three great glasshouses in Kew. It has a striking angular and highly linear external form with internal spaces that are both inward looking and which interface with their immediate outside space. The PoW responds to and respects the underlying linearity of this area of the gardens, a linearity which relates to its historic form and function as private gardens associated with residences on Kew Green. Its setting has a number of key elements:

- Its strongly linear character and the emphasis that this gives to views from its northern entrance/exit;
- Views of the angular form of the glasshouse from neighbouring areas of the Gardens, these enable appreciation of its innovative architectural form and character;
- Glimpsed view of the glasshouse from the Palm House terraces and pond area;
- Approach views to the northern and southern entrances;
- Its immediately related designed landscape which provides a modern setting for the building; and
- The immediately associated spaces which provide an ‘outdoors/indoors’ relationship between the collections and the landscape around it (this was a clear design intent);
- Glimpsed views from outside Kew Gardens, over the walls from buildings opposite and from the upper decks of passing buses

4) Kew Palace (Grade I listed and scheduled monument)

Kew Palace is an imposing and highly significant historic building. It sits on its own at the north of the gardens, the buildings that were once attached to it having been demolished historically. It has an open aspect on three sides, with unobstructed views to the River Thames. Its historic boundaries and its historic physical separation from the Gardens have long been removed and it now forms part

of the experience of the Gardens; as well as being key to understanding its history.

There are a number of key elements to its setting, including:

- Its highly prominent role as a key landmark in this area of the Gardens;
- Key views of its main frontage from the various locations to the east on the former Great Lawn and the location of the former White House;
- Views of its river frontage from the recreated gardens to the west and from the river itself;
- The formal gardens to the front and rear, specifically designed to complement the historic building;
- Views from its primary entrances on the east and west façades;
- Its visual and physical relationship to the River Thames;
- Views from upper floor windows which situate it in its wider landscape and highlight its relationship to the Gardens and the Thames;
- Key approaches to the building from the former Royal Kitchens, across the lawns to the east and from the Elizabeth Gates to the north; and
- The ‘memory’ of the nearby demolished White House, and the desire to reconstruct it in the mind’s eye in views of Kew Palace and in views from the Palace and grounds.

As discussed below, the setting of Kew palace has already been adversely affected by a number of modern developments, including the Kew Eye and Haverfield Estate Towers.

5) Pagoda (Grade I Listed)

Alongside the Palm House, the Pagoda is undoubtedly the single most recognisable architectural feature of the WHS; even featuring in 2009 on a special edition 50p coin to celebrate 250 years of the Botanic Gardens. It was designed as a truly monumental eye-catcher and viewing platform – its winding internal staircase providing access to level-after-level of windowed galleries with views in all directions. Key elements of its setting include:

- Framed views from the north along the Pagoda Vista (both longer and near distance);
- The relatively open nature of its immediate landscape which enables appreciation of its highly detailed and ornate architectural form and finishing;
- Glimpsed views of it from various locations across the Gardens and from the Old Deer Park landscape to the south;
- Its unchallenged prominence above the tree line of the RBG Kew;
- The wide-ranging long-distance views from its upper stories; and
- The views over the Gardens from all levels which provide a changing sequence of views highlighting different elements of the Gardens and enabling an appreciation of the rigid formality of Nesfield’s design.



6) Temple of Aeolus (Grade II listed) and Mound

The first Temple of Aeolus and its mound were conceived in the 18th century to provide a viewing platform over the designed landscape of Kew Gardens and to provide an eye-catcher in that landscape. This original 18th-century landscape lay predominately to the south, west and northwest. Views northwards over the then Royal Kitchen Gardens were not important at that time.

The relationship to the landscape changed in c. 1845 when the original temple was replaced by the current structure, the trees were removed and the mound grassed – at around the same time the landscape to the north was transformed from kitchen garden to ornamental herbaceous grounds (then replaced 20 years later by the Order Beds). The new temple now provided an outlook to the south/west over the pond and Palm House and to the north over the new herbaceous grounds and later Order Beds – it had been reimagined to form a publicly accessible viewpoint from which to admire the full gamut of Kew's emerging Victorian splendour, while reflecting its Georgian past with a classical eye catcher design that formed a key element in the new landscape design of the Gardens. Its current setting reflects this mid-19th-century position with views out to the north and west linking to the Palm House and Order Beds.

Key elements of its setting include:

- The prominent and unchallenged form of the Temple in the landscape;
- Views from the Temple northwards over the Order Beds (these are now partially obscured by tree growth);
- Views from the Temple to the south, southeast and east over the Victorian heart of the Gardens (these are now partially obscured by tree growth); and
- Views of the Temple from the Order Beds and from the landscape to the south, southeast and east.

7) Orangery (Grade I Listed)

The Orangery is an important building in the history of Kew Gardens. Alongside the White House, and later Crenelated Palace, it was the principal architectural feature in this area

of Augusta's gardens. It was designed to be seen across the Great Lawn and Lake as a key designed architectural element in the 18th-century landscape of Kew Gardens.

It was later adopted by Decimus Burton in his geometric design as a key feature along the Broad Walk, drawing the eye down the walk (when coming from the Palm House) and providing a visual barrier to views from the Little Broad Walk until the junction with Main Broad Walk was reached from the entrance gates.

It acts a visual marker to the change of direction in the Broad Walk.

Its current setting has retained important elements of its historic setting, and key aspects of its setting include:

- views of the Orangery, from paths and lawned areas, over open areas of lawn from the southwest (which reflect its designed relationship with the Great Lawn);
- changing views of the Orangery from the Broadwalk as the viewer progresses from the southeast to the northwest;
- views from the lawn area to the southeast of the main façade which enable appreciation of its architectural form;
- its screening function in relation to the Broadwalk; and
- its prominence in the landscape and its screening planting to the rear that reinforces its prominence in the landscape.

Contribution to OUV

The settings of individual buildings directly contribute to the OUV of RBG Kew in the following ways:

The OUV of the RBG Kew includes the history of scientific endeavour at the site, the collection of living and preserved collections to serve that scientific work, and the artistic and architectural features that can be seen at the site. RBG Kew houses an internationally significant collection of glasshouses, from the Orangery (for a time the largest Georgian glasshouse in England), to the Victorian Palm House (probably still the largest curvilinear iron-framed glasshouse in Europe) to the Temperate House (the largest surviving Victorian

greenhouse in the world) and the later 20th century Princess of Wales Conservatory. This collection of scientific buildings has successively been constructed to conserve the living collections that are essential to the scientific work at the site, and to display these plants in an educational and aesthetically attractive and celebratory manner for visitors. The settings of these glasshouses are largely contingent with the intentions of the original designers, including the Victorian Nesfield, and have been carefully designed by these designers to display the external architecture of the buildings to their best and most impressive effect (relevant Criteria ii and iii).

The OUV of the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century garden and architectural design, and the influence of the site in diffusing these ideas around the world. The Georgian Pagoda, Orangery and the Temple of Aeolus (rebuilt to Georgian plans by the Victorian Decimus Burton) on its mound, were all designed by the Georgian designer Chambers in close consultation with his patrons, Frederick and Augusta, who were key drivers and designers in Kew Garden in their own right. These buildings were intentionally placed within the wider landscape to create intentionally dramatic effects, and had particular relationships

to pre-existing landscape features, including Frederick's mound for his intended (but unbuilt) Mount Parnassus, and his Great Lawn outside the White House. All three buildings have had their settings subsequently adapted by successive generations of designers, building on the existing Georgian character – Nesfield reinstated and focussed the view on the Pagoda by his vistas; Burton and Nesfield altered the view from the Temple of Aeolus to encompass the new Herbaceous Ground/Order Beds, and to be a viewing mount for their newly created Palm House, Pond and gardens. These settings therefore also illustrate the Victorian response to pre-existing Georgian features in their landscape design, illuminating their design processes and enabling visitors to experience their design intentions (relevant Criteria ii and iv).

D10. Experiences beyond the visual (e.g. noise, smell, temperature, anticipation, emotion, intellectual context)

Being at Kew Gardens is a multi-sensory, emotional and intellectual experience for visitors, staff, students and



volunteers, with which the setting of the Gardens interacts in several ways.

Most of the WHS is a relatively quiet place, away from the noise and the bustle of the city. The absence of visual intrusion from the outside world reinforces this sense of escape. Within the glasshouses, people report being overwhelmed by heat, humidity and the combined smells of damp warm earth and exotic plants. As noted by David Attenborough in a BBC interview celebrating the 2018 reopening of the Temperate House: ‘I used to come down at weekends when I was getting really depressed and used to take a deep breath because there was the smell of the tropics here’. Outside of the glasshouses, people value the cleaner air close to the river; a feature of Kew repeatedly used in London Transport advertising throughout the 20th century. Closer to Kew Road, within the Evolution Garden (formerly the Order Beds) or walking alongside the boundary wall, the smell of traffic fumes becomes stronger, reminding the visitor of how close they are to a very busy road and a densely populated city.

Across the WHS the drone and roar of the planes overhead on the Heathrow flightpath is a frequent intrusion into the atmosphere of the Gardens. As noted in the London’s World Heritage Sites – Guidance on Settings, SPG, (2012):

‘Soundscape

Royal Botanic Gardens, Kew

Kew is well screened by its walls and landscaping buffers to traffic on its eastern and southern flank, but the Gardens are frequently disturbed by aircraft passing overhead on the Heathrow flight path. The low flight paths over the World Heritage Site undermine the character of the landscape as a place to escape the noise of the city.’ (Page 59)

Similarly, the noise of traffic can break through peace when walking from the noise of the waterfalls in the Rock Garden to the open space of the Order Beds next to Kew Road. Indeed, the smells, sounds and taste of the traffic on Kew Road are quite dominant down the most easterly side of the Gardens e.g. on the walk from Victoria Gate to the Temperate House and Pagoda. These smells and sounds are accompanied by glimpsed views of the busy road through the Cumberland Gate, and very dominant views through the Queen’s Gate near the Temperate House.

Anticipation and expectation are important elements of the visitor experience of RBG Kew, built by past experience, intellectual understanding, word of mouth and by advertising. RBG Kew has not always been in control of the visual imagery perpetuated about Kew, with London Transport producing a large number of posters advertising the site. These have had a focus on the exotic, fresh air, abundant wildlife and flowers, and iconic buildings of Kew Gardens, reinforcing the historic and well-established reputation of the site for its ‘otherworldliness’. This broad intellectual and emotional setting of Kew Gardens is important in developing people’s understanding of the site, its character, purpose and history, and actively shapes their emotional response to the site and memory making during their visit.

Contribution to OUV

In terms of contribution to OUV, the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century garden design, and the influence of the site in diffusing these ideas around the world. The atmosphere created and perpetuated by these successive designs, each of which have built on the last, is not a purely visual experience. Many senses are involved in the appreciation of Kew Gardens’ otherworldly *rus in Urbe*, for which it is so famous and so valued, and the multi-sensory experience of exotic Kew Gardens is another insight into the intentions of the designers who constructed this world (relevant to Criteria ii and iv).

D11. Seasonal nature of the site and its setting

Kew Gardens is a seasonally diverse site. Views become restricted in late spring as deciduous trees come into full leaf, and open up again in late autumn, as leaves fall. The boundary plantings at RBG Kew are essential for the maintenance of the enclosed character of the Gardens, and this becomes more vulnerable to outside influences after leaf fall. This is particularly an issue as there is a predominance of deciduous trees in the boundaries along Kew Road and against the Thames. Alongside visual impacts, road noise and fumes carry further across the site from Kew Road when deciduous trees are out of leaf.

Contribution to OUV of RBG Kew

In terms of contribution to OUV, the site includes the work of internationally famous designers at the WHS, illustrating significant periods in 18th- and 19th-century century garden design, and the influence of the site in diffusing these ideas around the world. The intentions of the designers are variously revealed, emphasised and obscured, as RBG Kew and its setting move through their seasonal character (relevant to Criteria ii and iv).

D12. Detractors

The setting of the WHS is affected by a number of negative influences and impacts, these arise from existing external developments; consented but unbuilt developments; and a range of other external factors such as aircraft noise; and internal factors such as planting locations which affect aspects such as the setting of individual buildings or the sense of enclosure. These issues are highlighted below.

External developments

Historically, the setting of Kew has been challenged and degraded by built development in and around the Brentford area. This trend continues with external development continuing to have an impact on the setting of the WHS. Key issues include:

1) Haverfield estate towers

These six c.1970 tower blocks are a particularly prominent feature of the urban landscape in Brentford. They have a significant visual impact on the setting and character of

the Gardens, particularly in relation to the Riverside Zone, Entrance Zone, North Eastern Zone and Palm House Zone. Key issues associated with the towers include:

- i They regularly overtop the screening afforded by the tree planting within the Gardens shattering the strong sense of enclosure and separation that underpins the Garden's character and significance. This separation is essential for maintaining the simultaneously exotic and rural 'otherworldliness' of RBG Kew, to enable the appreciation and understanding of the effects the historic designers were aiming to achieve – as royal private retreats and as a national botanical and horticultural garden (see Section 4.0 for how this directly contributes to the OUV of the WHS, its authenticity and its integrity);
- ii Two of the blocks are framed in views northwards along the Broadwalk – directly impacting on one of the Gardens' primary design features;
- iii They significantly intrude into views from and across the former Great Lawn challenging the prominence of the Orangery and Kew Palace;
- iv They overtop the Orangery in some views e.g. from the south, directly challenging its role in the landscape and affecting appreciation of its architectural form;
- v They appear directly behind and alongside Kew Palace in frontal views, challenging its prominence and affecting the appreciation of its architectural form;
- vi They severely detract from the quality of views from the rear of Kew Palace and from its upper floor windows;
- vii They appear in glimpsed, often seasonal, views from across the Gardens including from near the Palm House, across the Palm House Pond, from the Order Beds and neighbouring areas.

They are currently the single most harmful external development around the WHS. Its harmful affect has long been acknowledged with the 2002/2003 WHS inscription review mission by ICOMOS noting that that: '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.'

2) The Kew Eye

The Kew Eye, also known as the Wallace House development, is a single tall building situated in Brentford to the west of the WHS. It was built in c. 2012. It is particularly intrusive into views from the Riverside Zone and into the visual setting of Kew Palace where it features strongly in views from the rear of building and also features strongly in key views of it from the south/southeast where it directly competes with the architectural prominence of the building's main façade. The building also appears in glimpsed views from other locations within the gardens such as from the path junctions at the southwestern end of the Great Lawn. These views add to the sense of external development overtopping the

screening afforded by the tree planting within the Gardens degrading the strong sense of enclosure and separation that underpins the Garden's character, significance and OUV.

3) Waterworks/British Gas Development

This modern mid-rise and high-rise development lies to the southeast of the Haverfield Estate towers. Although not as tall or visually intrusive as the Haverfield Towers it still protrudes above the skyline in number of locations in the Entrance Zone and Riverside Zone. Its form infilling gaps between the Haverfield Towers and increasing the visual prominence of development in the Gardens and reducing the sense of separation and 'otherworldliness' in the Gardens. The development also has a harmful impact on the setting of Kew Palace.

4) Vantage London Building

The primary issue with the Vantage London building lies in its location on the alignment of the Pagoda Vista and hence, due to its height, its appearance behind the Palm House in views along the vista. This is a significant visual intrusion into a key designed view within the Gardens, and directly impacts on the OUV of the WHS and erodes the sense of separation and 'otherworldliness' of the Gardens.

5) BSI Building

The BSI building (at 389 Chiswick High Road) is a relatively modern tall building to the northeast of the WHS. It features in general views from the Temple of Aeolus over the Order Beds and slightly distracts from these views, eroding the sense of separation and 'otherworldliness' of the Gardens. It also appears in winter in glimpsed views of the Temple from the west.

6) Kew Road buildings

A number of the buildings along Kew Road protrude over the wall creating a degree of visual intrusion. A particular issue exists with a group of buildings, near to the junction of Lichfield Road, that appear in views southeast along the Broadwalk.

Consented and proposed developments

As well as the existing development highlighted above, future developments around the WHS also have the potential to negatively affect the setting of the WHS and harm its OUV should they be constructed. These include the consented, but undeveloped, Citadel scheme which if constructed would be visible in views of the Orangery and from the upper floors of Kew Palace.

D14. Other external factors

As well as external development there are a small number of other non-development factors that also affect the WHS these include:

- Aircraft noise and pollution from Heathrow flights
- Traffic noise and air pollution from Kew Road

Detractors



Haverfield Estate Towers behind
Orangery and Kew Palace



Haverfield Estate Towers
from Joseph Banks Centre



Haverfield Estate Towers
behind the Orangery



Haverfield Estate Towers
along the Broadwalk

Detractors



Haverfield Estate Tower
behind Kew Palace



Haverfield Estate Tower
behind Kew Palace



Haverfield Estate Tower
from Queen's Garden



Haverfield Estate Tower
from Queen's Garden

Detractors



Kew Eye behind Kew Palace



Kew Eye behind
the Queen's Garden

Below: View northwards over Kew towards tall buildings, from top floor of the Pagoda
View northwards over Kew towards tall buildings, from top floor of the Pagoda



Haverfield Estate Tower from Queen's Garden



Aircraft above Kew Palace
© Chris Blandford Associates



**KEY****Listed Buildings within Royal Botanic Gardens, Kew**

▲ Grade I ▲ Grade II* ▲ Grade II

E. Royal Botanic Gardens, Kew: Listed Buildings

1	Hanover House	Grade II
2	Telephone kiosk (K6)*	Grade II
3	Lamp stand*	Grade II
4	Sewer vent*	Grade II
5	Herbarium Cottage	Grade II
6	Royal Cottage*	Grade II
7	49 Kew Green	Grade II
8	Cast iron gates	Grade II
9	Cambridge Cottage	Grade II
10	Kings Cottage*	Grade II
11	29 & 31, Kew Green*	Grade II
12	23 & 25, Kew Green*	Grade II
13	21, Kew Green*	Grade II
14	17 & 19, Kew Road*	Grade II
15	9 & 11, Kew Green*	Grade II
16	Descanso House	Grade II
17	Alcove	Grade II
18	1 & 2 Kew Cottages	Grade II
19	Sundial	Grade II
20	Urn	Grade II
21	The Sower	Grade II
22	Museum no. II	Grade II
23	Icehouse	Grade II
24	Waterlily House	Grade II
25	Urn	Grade II
26	Temple of Aeolus	Grade II
27	Cumberland Gate	Grade II
28	Palm House Pond Retaining Wall	Grade II
29	Museum no. I	Grade II

30	Palm House Pond sculptures	Grade II
31	Temple of Arethusa	Grade II
32	Campanile	Grade II
33	Victoria Gate	Grade II
34	Temple of Bellona	Grade II
35	Unicorn Gate	Grade II
36	Milestone (on Kew Road)*	Grade II
37	Kings William's Temple	Grade II
38	Boundary Stone	Grade II
39	Isleworth Ferry Gate	Grade II
40	Evolution House	Grade II
41	Japanese Gateway	Grade II
42	Alcove	Grade II
43	Lion Gate	Grade II
44	Elizabeth Gate	Grade II*
45	Herbarium	Grade II*
46	Nash Conservatory	Grade II*
47	Queens Cottage	Grade II*
48	Ruined Arch	Grade II*
49	Avenue Lodge	Grade II*
50	Marianne North Gallery	Grade II*
51	Palm House	Grade I
52	Orangery	Grade I
53	Kew Palace Flats	Grade I
54	Kew Palace	Grade I and Scheduled Monument
55	The Pagoda	Grade I
56	Temperate House	Grade I

*Not under RBG Kew or HRP management

F. Public consultation and Inquiry report

1. Introduction

1.1 Purpose of this report

- 1.1.1.** The World Heritage Site Management Plan 2020–2025 (WHSMP) has been prepared as part of the regular cycle of updating the plan as recommended in UNESCO's Operational Guidelines. As part of this process a draft of the WHSMP was published online and circulated to statutory consultees and stakeholders for consultation.
- 1.1.2.** Over the course of drafting the WHSMP, RBG Kew also participated in two Public Planning Inquiries (Chiswick Curve and Citroen, alongside London Borough of Hounslow and Historic England who objected to both developments due to impacts on the World Heritage Site) and a High Court Challenge (Chiswick Curve).

2. Public consultation

2.1 The consultation process

- 2.1.1.** A draft of the WHSMP underwent consultation with the World Heritage Site Steering Group between 26th July – 30th August 2019. During this process feedback was received from all members, which include statutory consultees, the London Borough of Richmond, London Borough of Hounslow, Greater London Authority, Historic England and Historic Royal Palaces. This feedback informed the update of the public consultation draft, which was then advertised and published on the RBG Kew website between the 01st November to the 11th December 2019.
- 2.1.2.** Local amenity groups and stakeholders who had registered an interest in the new WHSMP were notified of the consultation and were invited to participate via a link to the live webpage. Advertisement of the public consultation was also displayed on the RBG Kew website, inviting the general public to contribute. Any further promotion of the WHSMP was subsequently restricted due to the calling of a general election and the rules of purdah coming into effect.
- 2.1.3.** It is also worth noting that prior to preparation of the full draft WHSMP a draft of the material relating to the description and analysis of the setting of the WHS was supplied to the WHS Steering Group for comment between 13th March to the 18th April 2019. Comments were received from all members, which include statutory consultees, the London Borough of Richmond, London Borough of Hounslow, Greater London Authority, Historic England and Historic Royal Palaces. These comments informed the preparation of the 1st draft of the WHSMP.

- 2.1.4.** The purpose of the public consultation process was to:

- Inform target groups (such as local amenity groups) and the general public about the management plan review.
- Gather their views on the issues and challenges, seek comments on the draft vision, key strategies, aims and objectives.
- Provide a mechanism for participants to communicate any concerns, knowledge, or suggestions that might influence the content of the 2020–2025 management plan for the Royal Botanic Gardens, Kew.

- 2.1.5.** All responses to the public consultation were considered following close of the consultation and this report sets out the key points raised and what changes were made to the finalised Plan, which was presented to the WHS Steering Group for sign off in April 2020.

- 2.1.6.** Nine responses were received from the public consultation. Responses included representatives from the Gardens Trust, the Kew Society, the Richmond Heathrow campaign, developers and the general public.

- 2.1.7.** A copy of the consultation feedback and RBG Kew response briefed to the WHS Steering Group can be viewed on request, details on how to go about this can be found here: www.kew.org/about-us/reports-and-policies/freedom-of-information

2.2 Key points raised and responses to them

Approach to potential harm from existing and future development

- 2.2.1.** Concerns regarding harm to the setting of Kew Gardens WHS from existing and future external developments was a key issue raised by consultees and the feedback was divided with some supporting the Plan's approach and others expressing concern.
- 2.2.2.** There was disagreement from some consultees on the description of the consented and proposed developments, and the degree of impact these would have on the WHS, with specific reference to '*the very upper end of less than substantial harm and very close to substantial harm*'. Whilst some consultees were in support of this assessment, the statement on degree of harm has been removed from the WHSMP given the range of potential factual scenarios this might need to articulate. References to specific proposed developments were also removed from the WHSMP.

- 2.2.3.** It was the view of some consultees that the notion of cumulative impact was much exaggerated in the WHSMP. Reference was made to the finding from the Inspector's report for the Chiswick Curve Inquiry (12.107) '*... that the battle against further visual intrusion into the WHS is one that had been 'fought and lost'*'. This is a statement that RBG Kew and other members of the Steering Group object to. The view allows for the pre-existence of tall buildings and the notional construction of further tall buildings in the future to justify new tall buildings. It is contrary to policy and guidance and it is exactly the concern expressed in the 2014 Management Plan, the original 2003 Management Plan and by ICOMOS at the time of inscription. Reliance on pre-existing harmful development to justify further harmful development is not accepted as being the correct approach. The WHSMP was therefore not updated to reflect the views of these consultees. The WHSMP instead supports the existing policy and guidance requirement to assess cumulative harm.

- 2.2.4.** As suggested by one consultee, RBG Kew would be in support of a 3D computer modelling system to enable views analysis and have been in discussion with Hounslow, Richmond and the GLA on moving this forward.

Balancing wider policy with 'no further harm' from external development

- 2.2.5.** It was posited by one consultee that RBG Kew was adopting a 'preservationist approach' to the Gardens setting and 'picking and choosing' which elements of modern development it was comfortable with. The consultee indicated that this was not a deliverable aspiration and was not in accordance with the Mayor's 2012 SPG 'London's World Heritage Sites – Guidance on Settings'.
- 2.2.6.** RBG Kew itself has developed over many years and has a strong tradition of commissioning new buildings and attractions within the landscape (see 'the Hive' and the Davies Alpine House as continuations of this). However, the Gardens are a palimpsest of designed landscapes all of which were created with the intent to create a largely inward focussed and enclosed space. Existing 20th-century buildings such as the six towers of the Haverfield Estate (and further tall buildings Kew is in opposition to), appear as jarring intrusions into this designed landscape. The harmful effect of these (alongside the presence and noise of aircraft) has long been recognised and was specifically referred to by ICOMOS in its 2003 report on the site at the time of inscription. It is not the case that RBG Kew are 'picking and choosing' the elements of modern development that they are comfortable with.

- 2.2.7.** The 2012 Mayoral SPG specifically highlights the context of Kew Gardens as a 'domestic' and the most 'self-contained' of the London WHS's, and not as a 'dense urban area' – similarly it refers

to the 'frequent disturbance' of aircraft as undermining the character of the landscape 'as a place to escape the noise of the city'. The WHSMP and Setting Analysis reflects this.

- 2.2.8.** Avoiding further harm to the OUV of the WHS is a key aspiration for RBG Kew and the WHS Steering Group as custodians of the WHS. This objective will be applied with local partners and will be subject to national and local planning policy as set out in action 13.5.2 of the revised WHSMP.

Description of Setting

- 2.2.9.** The description of setting in the WHSMP was widely supported by consultees, and by the WHS Steering Group during the development of the draft WHSMP, however there were a few aspects which were contested by a limited number of consultees.

- 2.2.10.** In describing the different aspects of setting on in Section 2.7 and Appendix D, point (ix) describes the WHS as a relatively quiet place, away from the noise and intrusion of the city. Contrary to this, Inspector's report for the Chiswick Curve Inquiry stated that the ability to see elements of the city beyond the Gardens (such as the tower blocks of the Haverfield Estate) provided a reminder of what the observer is escaping from. On this basis, one consultee also disagreed point (i) of the site setting description, which described the WHS as a 'world apart' attributed to its broadly domestic context.

- 2.2.11.** RBG Kew and the WHS Steering Group disagrees with this interpretation of the Inspector's report, which must be read as a whole. Paragraph 12.101 of the Inspector's Report draws on Historic England's evidence which states a key aspect of RBG Kew's character as an '*...Arcadian escape from the world of intense city living*'. Paragraph 12.102 then continues that theme stating that: '*it is fair to observe that the ability to see elements of the city beyond, like the tower blocks of the Haverfield Estate, or the so-called 'Kew Eye', and others, from within Kew Gardens, provides a reminder of what the observer is escaping from. Nevertheless, HE's statement neatly encapsulates the way in which the setting of Kew Gardens contributes to its significance.*' When read in context there is support from HE, the Inspector and the SoS in his letter that Kew Gardens OUV is 'revealed' and 'enhanced' by '*the ability to appreciate these qualities in a well preserved environment that still resonates with the sense of an Arcadian escape from the world of intense city living*'.

- 2.2.12.** Similarly, the Mayoral SPG specifically highlights the context of RBG Kew as '*domestic*' and the most '*self-contained*' of the London WHS's and identifies the noise of aircraft as '*undermining the character of the landscape as a place to escape the noise of the city*'.

Identification of views

- 2.2.13.** The WHSMP has shown a marked shift in approach from the 2014 Management Plan in emphasising the experience of Kew Gardens landscape as a kinetic one, not limited to a series of individual views. This approach is supported by the WHS Steering Group and was predominantly supported by consultees, with only one suggesting more a detailed assessment of individual views (identified by GPS coordinates) was required alongside analysis of how they contributed to understanding of OUV of the WHS.
- 2.2.14.** The new WHSMP retains the network of views and vistas on the site as identified in the 2014 WHSMP, but also includes a broader assessment of setting reflecting more recent guidance. As the London WHS Setting SPG makes clear at paragraph 4.3, '*setting is not solely defined by views into and out of a World Heritage Site; it can also be defined by other physical and experiential elements. These all affect the ability to experience the qualities of the place and appreciate its significance*'.
- 2.2.15.** The WHSMP Setting study describes the key characteristics of the site's setting, including the settings of keynote buildings within the site, and outlines how each aspect contributes to the OUV of the WHS. Its methodology, approach and narrative has been consulted on and is supported by HE and the GLA. It is the responsibility of developers to agree with the LPA, Historic England and RBG Kew appropriate viewpoints for the assessment of proposed schemes, taking into account the setting of the site and the location and nature of the development.
- Relationship with the Thames and Buffer Zone**
- 2.2.16.** Several consultees made reference to the absence of any action in the WHSMP to build on the relationship between the Thames and the Gardens, as well as neighbouring areas in the Buffer zone, such as Syon Park and Old Deer Park.
- 2.2.17.** There are no proposals to further open up the Gardens to the Thames. The tree and shrub planting along western boundary of the site reinforces the Gardens' strong sense of enclosure and separation, which is a key attribute of the Gardens' setting. It also performs a valuable screening function as well as acting as a windbreak against prevailing winds funnelling down the Thames.
- 2.2.18.** Whilst there are no plans to further open up the Gardens to the Thames, RBG Kew does participate in and support initiatives in the Buffer Zone and local area, most actively through the Thames Landscape Strategy group of which it is a member.

Increasing visitor numbers

- 2.2.19.** Consultees reiterated concerns over the increasing volume of visitors to the site as identified in

Section 10 of the WHSMP which is seen to increase pressure on the local infrastructure and the WHS.

- 2.2.20.** RBG Kew is working with Richmond Council and local residents to address concerns of the impact of visitors on local infrastructure. Action 10.5.10. sets out our aim to develop a strategic Travel and Event Plan, promoting the use of public transport and cycling for the Kew area by 2021. This is currently underway and will identify areas where Kew can invest and promote improvements in the local area.

Heathrow expansion

- 2.2.21.** Several consultees voiced their concern on the impact the proposed Heathrow expansion would have on the WHS and voiced their disappointment that the WHSMP did not expand on this.
- 2.2.22.** The Royal Botanic Gardens, Kew is opposed to anything that would greatly increase the number of flights over the Gardens, including an additional runway. One of the top three motivations to visit Kew is to escape the city to a relaxing, natural space and this is particularly true for our London based audience where green space is at a premium.
- 2.2.23.** The harmful effect of the presence and noise of aircraft has long been recognised and was specifically referred to by ICOMOS in its 2003 report on the site at the time of inscription. Feedback from first-time visitors also frequently refers to the level of noise, and the impact it has on people's experiences in the Gardens.
- 2.2.24.** Whilst increased nitrogen deposits have the potential to impact on the botanic collections around the Gardens, we have not seen any evidence of damage to plants or the glasshouses.
- 2.2.25.** RBG Kew are also aware that many international visitors to the Gardens use Heathrow as a travel hub, as do the small number of Kew staff who carry out conservation work around the world. However, a third runway at Heathrow would inevitably increase the number of aircraft passing over Kew Gardens. A change from the status quo would not be welcomed.
- 2.2.26.** RBG Kew has authoritative views on botanical and horticultural matters, but it is not a lobbying organisation and has therefore not taken a leading role in opposing the Heathrow expansion.

3. Points raised at inquiry

3.1 The Chiswick Curve Inspector's Report and Decision Letter

- 3.1.1.** The following provides a brief review and commentary on the Inspector's Report and Secretary of State (SoS) Decision for the Chiswick Curve, a major development that would affect the setting of Kew Gardens WHS and other designated heritage assets. The following analysis only provides commentary on

those points relevant to the WHS Management Plan. The Chiswick Curve Inquiry was undertaken and the report written prior to the publication of the draft 2019 WHS Management Plan.

- 3.1.2.** The SoS's decision was to refuse planning permission for the Chiswick Curve, contrary to the recommendation of the Inspector. The Secretary of State agreed with the Inspector that the Chiswick Curve would cause harm to Kew Gardens WHS and Kew Green Conservation Area (as well as other assets) but disagreed on whether the benefits outweighed this harm.
- 3.1.3.** The SoS decision was challenged by Starbones Ltd in s. 288 proceedings which were held on the 11th–12th February 2020. RBGK attended as a defendant to the proceedings. Starbones claim was dismissed by Mrs Justice Lang DBE in her judgement dated 10th March 2020. A further permission to appeal (PTA) application has since been submitted by Starbones to the Court of Appeal. We are awaiting the decision on whether the PTA has been granted.

3.2 Analysis of the Inspectors Report

- 3.2.1.** This section focusses on the aspects of the report dealing with the Kew Gardens and its setting. The Inspector dealt with Kew Gardens at paras. 12.95 – 12.132, also relevant are paras. 12.133 – 12.150, which deal with the planning balance and harm caused to heritage assets.

Description of Setting

- 3.2.2.** At paragraph 12.101 in describing the significance of the Kew Gardens WHS, the Inspector draws on Historic England's evidence stating that '*HE says that the setting of Kew Gardens cannot be separated from the first three attributes of OUV. The experience of the designed and historic cultural landscape of Kew Gardens, the iconic architectural legacy, and the living plant collections, is revealed and enhanced by the ability to appreciate these qualities in a well preserved environment that still resonates with the sense of an Arcadian escape from the world of intense city living.*' This highlights a key aspect of RBG Kew's character as an '...Arcadian escape from the world of intense city living'.
- 3.2.3.** In Paragraph 12.102 he continues to support that theme stating that: '*HE's statement neatly encapsulates the way in which the setting of Kew Gardens contributes to its significance.*'

- 3.2.4.** Paragraph 12.103 establishes that the experience of Kew Gardens is not a static one, limited to set views. It also supports the proposition that the visibility of external development can be harmful to the setting and OUV of the WHS, regardless of whether that visibility is associated with a particular view identified in the Management Plan. '*The Chiswick Curve would not figure prominently, or at all, in the series of important sight lines and views set out in the Management Plan. However, it would be visible*

from Kew Palace, and the Pagoda. Moreover, it would be readily visible from various places, particularly in the northern and eastern zones of Kew Gardens. If one accepts, and I do, that the experience of the designed and historic cultural landscape of Kew Gardens, the iconic architectural legacy, and the living plant collections, is revealed and enhanced by the ability to appreciate these qualities in a well preserved environment that still resonates with the sense of an Arcadian escape from the world of intense city living, then the visibility of the Chiswick Curve, as part of the city beyond, would have something of a harmful impact on the setting of Kew Gardens, and as a result, the OUV of the WHS, and its significance and the significance of the Registered Park and Garden and the conservation area.'

- 3.2.5.** In this statement the Inspector supports the approach taken with the new WHSMP, which emphasises the experience of Kew Gardens landscape as a kinetic one, not limited to a series of individual views.

Approach to potential harm from existing and future development

- 3.2.6.** Paragraph 12.99 of the Inspector's report states '*It is important, at this stage, to carefully consider one's approach. There is no dispute that the proposal would be visible from various parts of Kew Gardens, often in conjunction with, or from, listed buildings. There can be no doubt therefore that the Chiswick Curve would have an effect on the setting of Kew Gardens as a whole, but also the settings of various designated heritage assets within it.*' This differential between the WHS as a whole and the listed buildings within it is important when considering the assessment of impact, with particular reference to cumulative impact.
- 3.2.7.** This is further reinforced in paragraph 12.100 which states: '*The buildings that provide Kew Gardens' iconic architectural legacy are an important constituent of the palimpsest of landscape design. It seems to me then that any harm caused to the setting of any of these listed buildings, would thereby harm the significance of that building, but also that of the designed landscape. Given that the buildings and the designed landscape are important aspects of OUV, the OUV of the WHS, and its significance would be harmed, as would the significance of the Registered Park and Garden, and the conservation area. General views of the proposal and cumulative issues need to be considered too and it is to those that I turn first.*'

- 3.2.8.** Later in Paragraph 12.107, the Inspector goes on to say that '*In that overall context, the idea that Kew Gardens can be completely 'protected' from further visual intrusions of the city beyond is a battle that has been fought and lost.*' As stated earlier, this is a view that RBG Kew and other members of the Steering Group object to. It relies on the pre-existence of tall buildings and the notional construction of further tall buildings in the future to justify new tall buildings, which is contrary to policy and guidance.

3.2.9. In Paragraph 12.108 the Inspector is clear in supporting the cumulative harm approach taken by the WHSMP going as far as to clarify that it should take into account existing development, including development that pre-dates inscription at a WHS. Here he states that '*There was a good deal of debate about the cumulative impact of the proposal too. There is some force in the appellant's point that the situation at the date of inscription sets the baseline for consideration of cumulative impacts. However, it is made plain that elements such as the Haverfield Towers were seen, at the point of inscription, as significant detractors. If one accepts that part of Kew Gardens' significance as a designated heritage asset is its status as an escape from the city, then any intrusion by that city must be harmful. In that sense, it is not irrational, in my view, to look back beyond the point of inscription even if that process has some out-turns that appear strange.*'

Balancing wider policy with 'no further harm' from external development

3.2.10. Paragraphs 12.105 and 12.106 of the Inspector's report set out matters relating to the Council's adopted and emerging policy, which favours development of the Great West Corridor, with tall buildings being integral to that approach and subsequent harm to the WHS:

'12.105. Policy 1d of the Management Plan says that development which would impact adversely on the WHS, its OUV, or its setting, should not be permitted but the analysis cannot be as simple as that.'

'12.106. As I have dwelt on above, the policies of the Council, and the Mayor, adopted and emerging, strongly favour the development of the Great West Corridor as an Opportunity Area, with tall buildings as an integral part of that approach. Given the heights the Council favours, 60m on the appeal site for example, or the height of the Citadel, those tall buildings are also going to be visible from within Kew Gardens. The view of the Mayor in relation to the proposal for the Citroen Garage (which has a height of around 73m AOD) shows what he is prepared to accept in the balance between benefits and harm to Kew Gardens.'

3.2.11. It is important to note here that the 60m development referred to in the Inspector's report (the Citadel) is a consented permission, which has been implemented, on the same site as the Chiswick Curve. This development received consent prior to the inscription of Kew Gardens as a WHS and the Officer's report contains no analysis whatsoever of any impact, or even possible impact, on Kew Gardens, or any of the listed buildings within it.

3.2.12. The only explanation for this, as posited by RBG Kew in its closing statement to the Chiswick Curve inquiry, was that it had not been appreciated by anyone at the time that there was the possibility of there being any

impacts on Kew Gardens or heritage assets within it caused by the Citadel development. Such a planning mistake should not be used to justify an even more harmful mistake. The closing statement also noted that '*Finally, in this regard, the evidence of the Citadel being a fall-back is highly doubtful given the absence of any evidence showing it is viable, and indeed the assertion in the Environmental Statement is that it is not viable*'.

3.2.13. In reference to the Inspector's statement at 12.106 of the report '*..Great West Corridor as an Opportunity Area, with tall buildings as an integral part of that approach...*' it is important to note that Local Plan Review regarding the Great West Corridor was ongoing at the time and consequently can only be afforded limited weight.

3.2.14. The Regulation 19 draft Hounslow Local Plan Review does in fact seek to protect the WHS and avoid further harm. The supporting Great West Corridor Masterplan and Capacity Study envisages an approach using mainly medium rise building to deliver development in the Opportunity Corridor that meets Local and London-wide targets without the need for further intrusion into the setting of the Kew Gardens WHS.

3.3 The Citroen Inquiry

- 3.3.1.** The Citroen Site, Capital Interchange Way is a mixed used, high rise scheme that would affect the setting of Kew Gardens WHS and the Grade I listed Orangery.
- 3.3.2.** The application was refused by Hounslow then recovered and approved by the Mayor of London in February 2018. The application was then called in by the SoS to be determined at inquiry, which was held over nine days between 13th January – 6th February 2020. RBG Kew appeared as a Rule 6 party.
- 3.3.3.** The draft WHSMP was published on the RBG Kew website between the 1st November to the 11th December 2019, and so became relevant to the Citroen Site Planning Inquiry.
- 3.3.4.** The following provides a brief review and commentary on the analysis of the draft WHSMP provided in the Proofs of Evidence regarding heritage, townscape and visual impact for the applicant (L&Q) and the GLA presented at the Citroen Inquiry. At the point of making these comments the inquiry has finished and the evidence is in the public domain. The application has not been determined by the SoS prior to the adoption of the WHSMP. It is therefore not known how the SoS will respond to this evidence.

Description of Setting

- 3.3.5.** Comments in the PoEs relating to the description of setting set out in the draft WHSMP focused almost entirely on the Orangery and the Great Lawn, as that was the part of the Garden most affected by the proposed Citroen development.

- 3.3.6.** Whilst it was noted in the PoE of the L&Q witness that the Great Lawn received more mentions in the new WHSMP text compared to the 2014 WHSMP, it was concluded it was not disproportionate relative to other features mentioned.
- 3.3.7.** A key point of disagreement was held with the interpretation of the significance of the views of the Orangery over the Great Lawn. Both the GLA and L&Q witnesses set out a position that there were no intentional views of the Orangery from the Great Lawn. This is contrary to the position set out in the Draft 2019 WHSMP and the published 2020 WHSMP. The detailed analysis of setting contained in the WHSMP and further reinforced at Inquiry through detailed interrogation of historic plans and images demonstrated, contrary to the position of the L&Q and GLA witnesses, that the Orangery would have been partially glimpsed through a diffuse belt of trees and that this was a design intent to reduce visual competition with the White House, while ensuring that England's then largest glasshouse was still a key element of the wider composition of the landscape.
- 3.3.8.** Further, it was contested, by the L&Q witness, that the Great Lawn could be characterised as having a sense of 'big sky', which they felt was better attributed to expansive landscape views that would be found in the wider English countryside, such as Norfolk or Suffolk. This is found to be a misinterpretation of the 'big sky' quality as referred to in the description of setting, which refers to areas of bounded open space which opens up internal views, in a landscape that is otherwise dominated by trees. It is a feature created within the designed landscape for dramatic effect, experienced to best effect at Great Lawn and Syon vista.

4. Conclusion

- 4.1.1.** RBG Kew greatly values the support of local residents and groups interested and invested in the significance of the Royal Botanic Gardens, Kew UNESCO World Heritage Site. The Gardens are not only an international visitor attraction and scientific institution, but also a greatly valued resource for the local community.
- 4.1.2.** As such, the ideas and opinions of our partners, stakeholders, and the general public provides us with extremely valuable feedback to create a long-term vision for the site that fosters mutual interest and cooperation.
- 4.1.3.** The majority of comments received from the target groups and the general public were very positive, particularly concerning the vision and key strategies of the draft management plan. These comments reassure RBG Kew that its strategies are widely supported and there is support for the WHSMP as a material consideration of significant weight in planning decisions.

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Common abbreviations used in this document:

CBD: Convention on Biological Diversity

CITES: Convention on International Trade in Endangered Species of Wild Fauna and

DCMS: Department for Digital, Culture, Media & Sport

Defra: Department for Environment Food & Rural Affairs

GLA: Greater London Authority

HE: Historic England

HRP: Historic Royal Palaces

ICOMOS: International council on monuments and sites

LBoH: London Borough of Hounslow

LBoRuT: London Borough of Richmond upon Thames

SoS: Secretary of State

TLS: Thames Landscape Strategy

OUV: Outstanding Universal Value

TRAMS: Tree Risk Assessment Management System

UNESCO: United Nations Educational, Scientific and Cultural Organization

WHS: World Heritage Site

World Heritage Site Steering Group Members:

Royal Botanic Gardens, Kew (RBG Kew)

London Borough of Richmond upon Thames (LBoRuT)

London Borough of Hounslow (LBoH)

Greater London Authority (GLA)

Historic England (HE)

Historic Royal Palaces (HRP)

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