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Independent Review of the Royal Botanic Gardens, Kew

Consultants' report

February 2010

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Foreword

The Royal Botanic Gardens (RBG), Kew, is a non-departmental public body sponsored by Defra on behalf of Government. This report represents an independent review of Kew carried out for Defra. The review was announced in Written Ministerial Statements to the Houses on 16 July 2009 and the publication of the report announced on 10 February 2010 in Written Ministerial Statements by Huw Irranca-Davies, the Minister for Marine and Natural Environment.

All non-departmental Public Bodies are reviewed periodically by their sponsoring department to assess their performance and whether there remains an ongoing need for each of their functions. The last comprehensive review of Kew was carried out in 2001 although an independent Science Visiting Group carried out a separate audit of Kew's scientific activities in 2006.

The team who carried out this review consisted of Sir Neil Chalmers, Warden of Wadham College, Oxford and former Director of The Natural History Museum, London, together with three consultants: Mr. John Y. Brownlow, Director Noble Brownlow Associates (financial consultant); Professor Hugh Dickinson, Professor of Plant Sciences at the University of Oxford (science and education consultant); and Mr. Bruce Hellman (heritage and government relations consultant). The review started in August 2009 and the report was submitted at the end of January 2010.

The review was overseen by a Steering Group consisting of officials from Defra and other Government Departments, Kew, a member of Defra's Science Advisory Council and individuals with expert knowledge of organisations and activities similar to Kew. Members of the Steering Group are listed in appendix 1 of the report itself.

This report contains the review team's findings and its publication completes the evidence-gathering phase of the review process. The review's terms of reference can be found in the introduction to the report but in summary they focus on Kew's programme of plant and conservation based science, its offer as a major public attraction, issues relating to financial planning and management and efficiency savings, engagement with stakeholders and operational management issues, and also on Defra's role as the Government's sponsoring department.

We would like to thank the review team for their rigorous and comprehensive approach to gathering evidence for the review, their in-depth analysis of Kew's many activities and the conclusions and recommendations arising from their work. In addition, we would also like to thank the Steering Group who were invaluable in providing a high degree of challenge and enquiry during the course of the review.

This report represents the views of the review team and does not constitute government policy. Defra will now examine the report and its recommendations in detail with the intention of producing a government response later this year.

Electronic copies of the report can be downloaded from the Defra website at www.defra.gov.uk/environment/

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Executive Summary and Recommendations

The review team found that Kew has been fulfilling its statutory obligations since it was last reviewed in 2001. Many of its achievements have been impressive, but some areas of its work give cause for concern. In particular, Kew is in danger of not being able to carry out its scientific research at a world class level in the future, and of not being able to keep some of its main visitor attractions open to the public, notably the Temperate House. Both financial and organisational remedies need to be applied. These are spelt out in the report.

Kew is a very successful visitor attraction. Its two sites, at Kew Gardens and Wakehurst Place, are heavily visited and highly valued by visitors. More needs to be done at Kew Gardens, however, to improve the standard of interpretation of plant displays and to improve the standards of visitor support services such as retail, catering, and signposting. Kew's educational work is excellent.

The review team found that Kew has done a great deal to increase its self-generated income from a variety of sources including its science, its visitors and other customers, and, particularly, from fund-raising. The latter has been especially impressive. Further growth across all major areas of income generation is planned. Kew has not done enough, however, to make efficiency savings.

Total Grant-in-Aid from Defra increased by 45% in cash terms over the period 2001/02 to 2009/10 (18% inflation adjusted). This compares favourably with funding trends for other Defra sponsored bodies over the same period, but lags behind the increase over the same period in comparable bodies such as national museums and galleries sponsored by DCMS.

Kew is developing a planned, prioritised maintenance programme for its heritage buildings and has put the management of its estate on a professional footing. There is potential to finance part of the maintenance programme through fund-raising. Some of its heritage buildings could generate increased commercial revenue.

The review team found that Kew perceives itself to be contributing greatly to Defra's objectives and to the objectives of other Government Departments (OGDs), but that these Government Departments do not share this perception. Kew needs to improve its external relations to enable it to overcome this problem. Equally, Defra, and more generally, the Government need to be clearer and more consistent in what it they are seeking from Kew. In particular, Defra needs to accept that Kew's Grant-in-Aid that it administers is intended to support on behalf of Government all of Kew's statutory duties, including the maintenance of its heritage buildings, and not just those that fall within the ambit of Defra's objectives. The review team believes that Defra should continue to be Kew's sponsoring Department. However, recognising that Kew is unusual among the bodies that Defra sponsors in that Kew is a major visitor attraction with important heritage and cultural components, the review team sees merit in Defra benefiting from the expertise of DCMS in these two areas, and recommends that a liaison group be set up between Defra, DCMS and Kew to this end.

The review team concludes that in general the services, activities and organisational arrangements at Kew remain the most effective means of achieving its own, Defra's and Government-wide objectives. The recommendations that we make below are intended to improve the quality, effectiveness and value for money of Kew's services. The following themes underlie these recommendations.

Kew should focus as its top priority on its collections and its collections-based science, and should not spread its effort too thinly.

Kew should do more to drive up its standards across major areas of its work, including its science, its public offer and its financial planning and financial management.

Kew should engage more with stakeholders.

Kew should streamline its management structures.

Executive Summary and Recommendations

Kew should increase its financial reliance further both by increasing self-generated income and through efficiency savings.

Defra should unambiguously support all of Kew's statutory duties through its Grant-in-Aid funding, which should be sufficient to enable Kew to weather the forthcoming three very difficult financial years ahead, and thereafter to support Kew's increasing self-reliance.

If our recommendations are acted upon, they will complement a great deal of excellent work that is going on at Kew or is planned at Kew for the future. Taken together this will do much to ensure a sustainable financial future for Kew and for its world class science.

Our specific recommendations are given below.

Recommendations

Scientific Research

RECOMMENDATION 1. Kew should focus its research on the objectives of the institute's research strategy and avoid spreading itself too thinly.

RECOMMENDATION 2. Kew should develop a science research strategy comprising explicitly defined, costed and prioritised research programmes.

RECOMMENDATION 3. Kew should develop more strategic alliances in order better to deliver its science.

RECOMMENDATION 4. Kew should drive up standards through a rigorous review and monitoring of research programmes and projects.

RECOMMENDATION 5. Kew should set up a research support office.

RECOMMENDATION 6. Above all, Kew should give the highest institutional priority to maintaining its collections-based research at world class level.

Advice, Instruction and Education

RECOMMENDATION 7. Kew should develop a policy on the relation between its contract-driven Kew Innovation Unit (KIU) and core research.

RECOMMENDATION 8. Kew should develop new professional training courses, where costings and assessment of the market indicates that they will be profitable.

Quarantine and Other Services

RECOMMENDATION 9. Kew's quarantine services, once established in their new building, should continue to operate at their normal level of activity.

Care of Collections and Access to Collections

RECOMMENDATION 10. Kew should consider whether curation and research should be carried out by separate groups of staff.

RECOMMENDATION 11. Kew should seek to work closely and urgently with the Royal Botanic Garden, Edinburgh and The Natural History Museum, London to create a unified virtual herbarium within the wider context of the development of a unified global herbarium.

Executive Summary and Recommendations

RECOMMENDATION 12. Kew should engage vigorously with the international community to achieve this end.

RECOMMENDATION 13. Kew should keep under review the arrangement whereby the herbarium, library, archives and art collection are managed within the one department.

RECOMMENDATION 14. Kew should pursue as a top priority its policy of developing Phase Two of the Millennium Seed Bank.

Kew as a Visitor Attraction

RECOMMENDATION 15. Kew should develop an interpretation master plan as a central feature of the landscape master plan for the Kew site.

RECOMMENDATION 16. Kew should improve the quality and scale of interpretation at the Kew site by the use of world class interpretation techniques.

RECOMMENDATION 17. While formulating its landscape master plan, Kew should consider the development of a high impact indoor public facility that allows for the display of living plants with a significant interpretative element, with public spaces for dialogue between Kew's experts and its visitors and for large exhibitions and public events.

RECOMMENDATION 18. Kew should create a post within its senior management team, the holder of which is responsible and accountable to the Director for the development and delivery of the interpretation master plan and for the entire public offer.

RECOMMENDATION 19. Kew should ensure that the heritage buildings at the Kew site are treated within the landscape master plan as an important and integrated part of the visitor offer.

RECOMMENDATION 20. Kew should improve the impact of the Millennium Seed Bank as a part of the visitor offer at Wakehurst Place, and in the long term develop a public facility at the Millennium Seed Bank that would offer more engagement for visitors with its scientific work.

Horticulture

RECOMMENDATION 21. Kew should consider the current workload on the Horticulture and Public Experience staff, and particularly the effect of major exhibitions and new programmes.

RECOMMENDATION 22. Kew should develop a strategy for the major living collections, and make it clearer in the public offer which are specimen plants and which are included solely for display purposes.

RECOMMENDATION 23. Kew should do more within legal and practical constraints to make plant material and information on this material available to the public.

RECOMMENDATION 24. Kew should work to bring together more closely the horticultural and scientific staff, and should ensure a higher profile for horticulture in the Breathing Planet Programme.

RECOMMENDATION 25. Kew should become more involved in national and international horticultural networks and societies.

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Resources

RECOMMENDATION 26. Kew should agree with Defra the quantity and quality of work that it needs to perform, judged against international benchmarks, to fulfil its statutory duties, and cost such activities.

RECOMMENDATION 27. Kew should further improve its ability to cost and report on all of its activities

RECOMMENDATION 28. Kew should produce an annual costed and prioritised business plan to complement the Corporate Plan, that distinguishes statutory from desirable additional activities and that assesses the effects of quantified fluctuations in income on the plan.

RECOMMENDATIONS 29. Kew should deliver efficiency savings of £0.5 million per annum by the financial year 2012/2013.

RECOMMENDATION 30. Kew should keep under review its staffing levels and costs to ensure that they are appropriate to Kew's activities as set out in the business plan.

RECOMMENDATION 31. Kew should increase its net revenue from commercial and other activities by £1 million per annum by 2012/2013.

RECOMMENDATION 32. Kew should increase by 2012/2013 its net return from fund-raising from the current £8.8 million per annum to £13 million per annum.

RECOMMENDATION 33. Kew should renegotiate the Wakehurst Place lease with the National Trust with a view to assuring a long-term, sustainable future there, or, if this is unsuccessful, mothball Wakehurst Place and plan an exit strategy.

RECOMMENDATION 34. Defra should confirm its Grant-in-Aid to Kew six months before the start of a financial year, and indicate at the same time, when economic conditions allow, the level of the Grant-in-Aid for the year after.

RECOMMENDATION 35. Defra should maintain Grant-in-Aid to Kew at £25.2 million per annum up to and including 2012/2013, this to consist of an operating grant of £17.6 million and a capital grant of £7.6 million – the capital grant to support, first, the introduction of Kew's IT strategy, thus promoting sustainable efficiency savings, and second to pump prime fund-raising for the Temperate House.

RECOMMENDATION 36. Defra should make a one off grant of £3 million in 2010/11 and of £1.5 million in 2011/12 to enable Kew to make the transition to a new funding base for the Millennium Seed Bank.

RECOMMENDATION 37. From 2012/13 onwards, Defra should ensure that Kew receives an operating grant that at least maintains its value in real terms, and in addition take into consideration the overall trend in the Grant-in-Aid made by DCMS to its sponsored museums and galleries when it decides on the level of Grant-in-Aid that it makes to Kew.

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Heritage Management and Support

RECOMMENDATION 38. Kew should complete the development of a prioritised, planned maintenance programme and start to implement it.

RECOMMENDATION 39. Within Kew's overall fund-raising campaign, it should launch a fund-raising programme to secure the restoration of top priority heritage buildings, namely the Temperate House and the Palm House.

RECOMMENDATION 40. Kew should develop a plan for optimising the income potential of its estates drawing on best practice from other bodies with comparable heritage assets.

RECOMMENDATION 41. Kew should ensure that it has access to the necessary specialist heritage expertise as it develops its landscape master plan.

Support for the Objectives of Defra and OGDs

RECOMMENDATION 42. As part of a wider initiative to improve its communications Kew should set up a dedicated External Affairs unit to improve the effectiveness with which it interacts with Defra, with OGDs and with other major stakeholders.

Sponsorship Arrangements

RECOMMENDATION 43. Defra should remain the lead sponsoring department for Kew.

RECOMMENDATION 44. The Government should develop a clear overall picture of what it expects Kew to deliver for the nation, and should set up a system which recognises explicitly the contribution that Kew makes through the Grant-in-Aid that it receives from Defra to the objectives both of Defra and of OGDs.

RECOMMENDATION 45. An inter-departmental liaison group should be set up, initially involving Defra and DCMS, to ensure that both Defra and Kew receive the expert advice on matters of policy and best practice that lie outside Defra's but within DCMS's remit.

Other Issues

RECOMMENDATION 46. Kew should become significantly more outward-looking by forging strategic alliances with leading EU systematics and other research institutions. In so doing it should take on a more high profile and leadership role, particularly within EU consortia of taxonomic institutions.

RECOMMENDATION 47. Kew should seek to develop with the Royal Botanic Garden, Edinburgh and The Natural History Museum, London an agreed policy and plan for their plant-based taxonomic research and curation, which would lead to major joint programmes of work.

RECOMMENDATION 48. Kew should strengthen its senior management by reducing the size of the senior management team and by changing the deputising arrangements at the most senior level.

RECOMMENDATION 49. Defra and Kew should consider the most appropriate form of reviews for the future in order to continue to drive up standards.

RECOMMENDATION 50. Defra should consistently and unambiguously recognise that its Grant-in-Aid to Kew properly supports the performance of all of Kew's statutory duties, and not just those that fit most comfortably within Defra's current objectives.

Chapter 1: Introduction

1. This report arises from the independent review of the Royal Botanic Gardens, Kew (RBG) announced by the Minister for Marine and Natural Environment, Huw Irranca-Davies on 16th July 2009. The terms of reference of the review are as follows:
 - To conduct an evaluation of the performance of the Royal Botanic Gardens, (RBG) Kew in fulfilling its statutory obligations since the last review in 2001;
 - as part of the evaluation, to pay particular attention to resourcing and the effectiveness of income generation, infrastructure and heritage management and support; to consider how the scientific and other activities of RBG, Kew support the objectives of the Department for Environment, Food and Rural Affairs (Defra) and other Government departments; and to review the existing Defra sponsorship arrangements;
 - to consider in the light of this evaluation and the views of other customers and stakeholders whether the services, activities, and organisational arrangements at RBG, Kew remain the most effective means of achieving its own, Defra's, as well as Government-wide objectives, such as those relating to climate change, conservation and biodiversity, overall science policy, and the Operational Efficiency agenda;
 - to assess what changes, if any, are needed in the light of the findings of the review to improve the quality, effectiveness and value for money of RBG, Kew services and to set out the rationale and to recommend appropriate options to Ministers. These should address how best to ensure a sustainable financial future for RBG, Kew and its world class science.
2. The review team consisted of Sir Neil Chalmers, Warden of Wadham College, Oxford and former Director of The Natural History Museum, London, together with three consultants. These were Mr. John Y. Brownlow, Director Noble Brownlow Associates (financial consultant), Professor Hugh Dickinson, Professor of Plant Sciences at the University of Oxford (science and education consultant), and Mr. Bruce Hellman (heritage and government relations consultant). The team consulted extensively with members of RBG, Kew, including trustees, staff and trade union representatives. Members of the team made visits to the Kew site and Wakehurst Place both for pre-planned meetings and as 'mystery visitors'. Members of the team also consulted widely within Defra, meeting the Minister for Marine and Natural Environment, the Permanent Secretary, the Chief Scientific Adviser to Defra, and many Defra officials. The team also consulted officials from a range of other Government Departments (OGDs) and customers and stakeholders from other organisations. A full list of those consulted is given in Appendix 1. The review team would like to thank all those consulted for the time they gave to provide inputs to the review. The review team would also like to thank John Garrod and Nicky Gee from Defra, and Barbara Lewis from Kew for their support in arranging the necessary meetings and discussions.
3. The structure of this report follows closely the terms of reference. Chapter 2 evaluates the performance by Kew of its statutory duties, taking each statutory obligation in turn.
4. Chapter 3 covers the second term of reference, and reviews in turn resourcing and income generation; infrastructure and heritage management and support; the contribution of Kew to Defra's objectives and to the objectives of OGDs; and the sponsorship arrangements with Defra. Some of the recommendations that follow from this evaluation will, if accepted, require action by Kew; some by Defra; and some more widely by Government.
5. Chapter 4 covers the third and fourth terms of reference, and considers whether the current arrangements at RBG, Kew enable it to deliver its remit as effectively as possible. The chapter identifies a number of broad themes that emerge from the review, and concludes with recommendations that relate to these themes.

6. Three initial points need to be made before proceeding to the body of the report. First, the review team took seriously the requirement that any recommendations that it made “should address how best to ensure a sustainable financial future for RBG, Kew and its world class science”. The review team was fully aware of the great pressure on Government departments, including Defra, to reduce public expenditure in light of the difficult global economic conditions current at the time of the review. This makes the task of ensuring a sustainable financial future for RBG, Kew a particularly challenging one, but the review team was clear that the terms of reference were unchanged by the difficult economic climate.
7. Second, since 2007, RBG, Kew has been developing a programme called the “Breathing Planet Programme” (BPP). This builds upon Kew’s past and present range of activities, and re-formulates it within a new framework. The aim of the programme is to organise, focus and present Kew’s work in an integrated and compelling way, and so to address more effectively some of the major environmental challenges that the world faces today. The BPP has seven main strategies, ranging from the science of plant and fungal diversity, through to conservation and sustainable use, to the public enjoyment and understanding of plant diversity. These seven strategies are set out in Appendix 2. The BPP pervades much of the thinking at Kew, and is referred to periodically in the body of the report.
8. Third, we use the term “Kew” as shorthand for RBG, Kew throughout this report, except in places where it is important to distinguish the formal organisation, RBG, Kew, from either the Kew Site or from Wakehurst Place.

Chapter 2: Evaluation of Kew's Performance of Its Statutory Duties

9. In this chapter we consider each of Kew's statutory duties in turn. Our overall conclusion is that Kew continues to fulfil its statutory duties, and in many respects to do so very well indeed. However, there are some areas where Kew is coming close to failing to fulfil its statutory duties. We identify these and make recommendations to remedy the situation. We also make recommendations where Kew is certainly fulfilling its statutory duties, but where improvements should, in our view, be made.

2.1 First statutory duty. "Carry out investigation and research into the science of plants and related subjects and disseminate the results of the investigation and research."

10. An independent audit of Kew's science was carried out in 2006, which reported favourably on Kew's science. Another audit is planned for 2011. The review team therefore decided that it was inappropriate to carry out a very detailed evaluation of Kew's science, project by project. Rather, it concentrated its review on broader issues relating to Kew's scientific research.
11. Our main conclusion is that although Kew is a world class scientific institute that contributes to the global good, its world class status is currently under threat. We here outline the reasons behind this conclusion, and propose some remedies. Some of these remedies lie in the hands of Kew, some in the hands of Defra.
12. Kew has unique science resources both institutionally and individually. These include an outstanding herbarium, fine laboratory facilities both at Kew and at the Millennium Seed Bank at Wakehurst Place, the world-leading Millennium Seed Bank itself, and a group of some 240 plant scientists, several of whom are internationally renowned. Kew's traditional core scientific strength has been in and remains that of plant taxonomy. This is supplemented by in-house research into plant physiology, developmental genetics, biochemistry, ecology and conservation. Kew has collaborative links with scientists from a wide range of disciplines both in the UK and in the rest of the world. It delivers blue skies science, such as the current angiosperm phylogeny (APGIII: Chase & Reveal 2009), and new and important data on plant speciation (Widmer, Lexer & Cozzolino 2009) and evolution (Christin *et al* 2008), which is recognised by the international scientific community to be of the highest quality. Likewise it delivers applied science which is strategically important in relation to the conservation of biodiversity worldwide (e.g. on plant barcoding; Hollingsworth *et al* 2009). (Details of the above publications are in Appendix 5.) No other botanic garden in the world has either this combination of facilities or achievements to its credit. For this reason, the review team believes that it is critically important to ensure that this world class status is maintained.
13. We see a number of threats.
14. **First, from the evidence of Kew's 2008/09 Annual Report, the quality of Kew's substantial research base has diminished in recent years**, largely because posts that have fallen vacant have remained unfilled through lack of funds. There has also been some diversion of core research effort into income-generating activities.
15. Since 2007/08 the four principal measures of science-based activities (the numbers of publications, high-impact publications, conservation and sustainability assessments, and major habitat conservation surveys) have fallen significantly (Table 2.1, which is taken from p.8 of Kew's 2008/09 Annual Report).

Chapter 2: Evaluation of Kew's Performance of its Statutory Duties

Table 2.1

Kew's science performance over three years

Key Performance Indicator	Outcome 2006/07	Outcome 2007/08	Outcome 2008/09
1. Publications	465	518	300
2. High impact publications	78	87	60*
3. Conservation and sustainability assessments	3,848	4,523	2,663
4. Major habitat conservation surveys	12	9	7

* See comments on Table 2.2

16. There is a danger of making judgments based on results from a single year, especially as publication rates can fluctuate due to the schedule under which research projects come on stream and terminate, but it is noteworthy that these results largely include the outputs of the world class scientists who have now moved on.
17. Although Kew's overall research output is good and much of it has a high impact, the review team has collected data that suggest, subject to the comparability of the data, that on some measures Kew's science output is not as efficiently delivered as at other comparable institutions around the world. However, in 2009 the number of papers that Kew published in high impact journals has shown a welcome increase (Table 2.2).

Table 2.2

Science research metrics for Kew and comparable institutions around the world

Institute	Researchers	Publications (Total)	Peer Reviewed	High Impact (>2)
RBG KEW (2008 calendar year)	85.2	305 (3.6/scientist)	Data unavailable	60 (113)* (0.7 (1.3)*/scientist)
BG TRUST (AUSTRALIA) (2007/08)	50	Data unavailable	189 (3.8/scientist)	c. 70 (1.5/scientist)
RBG EDINBURGH (2008/09)	30	184 (6.1/scientist)	84 (2.8/scientist)	27 (1.1/scientist)
MISSOURI BG (2008/09)	46	285 (6.2/scientist)	176 (3.8/scientist)	88 (1.9/scientist)
NEW YORK BG (2008/09)	35 (including herbarium curators)	100 (2.8/scientist)	90 (2.6/scientist)	15 (only impact factor 3> data available)(0.43/scientist)
NHM (BOTANY) (08/09)	25	162 (6.5/scientist)	91 (3.64/scientist)	25 (estimate) (1.0/scientist)

* Figures in brackets are for high impact papers in calendar year 2009 provided by Kew and showing a considerable increase in this metric.

Chapter 2: Evaluation of Kew's Performance of its Statutory Duties

18. A persistent message received by the review team was that Kew's research base is in danger of falling below its critical mass. This danger is heightened by the very wide science remit that Kew has given itself within its Breathing Planet Programme (BPP). The review team is concerned that Kew is trying to do too much with too little.
19. **Second, and following on from this, we found it difficult to identify an integrated science strategy within Kew.** Nowhere on Kew's otherwise-excellent website, or in documentation currently available can a clear description of the institute's science strategy be found. Entering 'research strategy' on the website, the viewer is routed to the Science Directory which simply lists teams and projects.
20. Most world class science institutions have a science strategy, featuring clear science priorities and foci, programmes of research within each area of focus, and allocation of people and finance to support such programmes. Although Kew started moving in this direction under the previous administration, progress was slow, perhaps owing to a complex system of matrix management (see below) and the extraordinarily large number of projects under way. We note that the BPP is now intended to provide a framework to address these problems, and we are encouraged by this. However, the BPP is still being developed, and we urge that as this development continues, the highest importance is attached to the programme providing a very clear focus for Kew's research and an equally clear set of priorities. Without this, there is the danger that Kew will spread itself too thinly and that the quality of its work will suffer.
21. **Third, we commend Kew for having developed meaningful strategic alliances with other world class institutions,** such as Imperial College, London, and The Missouri Botanic Garden. However, given the remit that Kew has set itself in new fields such as restoration ecology, and the finite resources at its disposal, we believe that it is crucial that Kew develops more strategic partnerships with other high-quality research institutes which specialise in areas that Kew lacks or in which it is weak. Areas such as climate science, geomorphology, and ecology would be particularly relevant.
22. **Fourth, we are concerned about the maintenance of standards.** It is common practice in world class research institutes today to have inbuilt mechanisms which drive up standards and ensure that they are maintained. Thus, proposed research programmes, and research projects within them, are subject to tough internal, and frequently to external, peer review. There will also frequently be competition for funding, either internal or external. Once commenced, projects and programmes are typically subject to monitoring and their outcomes evaluated, with the information so gained being used to shape the direction of future research. Although we found welcome evidence of a move in this direction within the herbarium, we failed to see this being applied to all areas of Kew's research.
23. Furthermore, the review team is not convinced that the periodic Science Audit is the most effective way of assessing the quality of science at Kew. Such reviews are usually very disruptive (even the light-touch versions) and infrequently fully benefit from the expertise available within the review panel. Different review modalities are now in place in other institutes, often activity based, and focused on maintaining a continuing dialogue with members of the review grouping. This approach encourages the development of a 'rolling review' programme which can be both more effective yet less disruptive. Importantly, the UK's research councils are currently developing review processes that focus on the measurement of science excellence combined with 'impact'. Since Kew's activities should score highly on the latter measure, elements of these review systems might with value be incorporated into that finally adopted by Kew.

Chapter 2: Evaluation of Kew's Performance of its Statutory Duties

24. **Fifth, we noted that Kew has a complicated structure for managing its research**, with departments that hold resources, and teams that work on a massive range of cross departmental projects in broadly defined areas of research. While we found general contentment among staff with this arrangement, we believe that no other major research institute in the UK runs such a system, and those that once did are moving towards handling research projects within individually-managed programmes, each with a beginning, a system of monitoring and final evaluation, and an agreed cost. We are unconvinced that the present arrangement is well suited to delivering the BPP's science objectives and recommend that Kew also develops a programme-based structure for managing its science, with each programme targeted on a defined BPP objective, managed by appropriate teams with identified leaders, and with quality ensured by setting milestones and final objectives (see previous paragraph). We also strongly believe that Kew should consider other measures to drive up research standards by making changes at the level of personnel. These should include rewarding excellence by the reintroduction of Individual Merit Promotions, and the improvement of career progression by the greater separation of curation and research. Although the latter is unlikely to be popular, it has proved highly effective in other institutions such as the Royal Botanic Garden, Edinburgh, The New York and Missouri Botanic Gardens in the USA, and The Natural History Museum, London. We return to this issue in the section below on curation.
25. **Sixth, we noted that Kew does not yet have a research support office.** The role of such an office would be to oversee the writing of research grant proposals, to approve their submission, monitor the progress of these proposals, negotiate their terms, monitor the projects once funded, and to oversee their evaluation. Most, if not all world class university departments and research institutes have such a facility, and regard their work as essential, particularly in the complex arena of international funding. Such an office could also help to promote understanding of the institute's work in our national and European parliaments.
26. More engagement with the UK research councils would be of benefit to Kew at a number of levels. BBSRC alone has committed substantial funding to systematic and taxonomic research in the recent past (£10 million in 2004/5, £10.5 million in 2005/6 and £12 million in 2006/7), from which Kew seems not to have benefited. (There was, however, an eligibility problem for Kew during 2007 which should be taken into consideration.) Engagement is not restricted to writing grant proposals and it is disappointing that few Kew researchers have applied to join the research council grants committees, although the councils themselves claim to have made strenuous efforts to encourage taxonomists to do so. Further, other institutes have been proactive in their dealings with the research councils, for example organising site visits and science updating meetings. A research support office would greatly aid the promotion of these types of interaction.
27. We understand that Kew is intending to develop such a research support capability and that this will be the remit of the recently appointed Director of Development. We welcome this in principle, but believe that the provision of such research support will require a committed and continuous science input. Adding this function to the Director of Development's duties would, we believe, stretch his remit too widely. We recommend that a research support office be established within the science management structure, but with defined responsibilities to the Director of Development.
28. **Seventh, the world class standing of Kew's research is clearly threatened through the lack of funding.** The review team is clear that Kew must protect its core science base as a top priority. Without its collections and its staff who curate and research them, it cannot fulfil its statutory functions, nor can it develop the base on which to build its future plans. Both Defra

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and Kew have a responsibility to ensure that this core science base operates at the highest international level, Defra by contributing sufficient Grant-in-Aid, and Kew by allocating funds as a priority to its core science base, by generating additional funds for itself and by achieving efficiency savings. These funding issues are discussed more fully in Chapter 3.

29. Finally, the review team notes that Kew's ability to bring about many of these changes would be improved by creating a post of Director of Science, the holder of which would be responsible and accountable to the Director for all aspects of Kew's science. Such a new post could be created by restructuring among senior management rather than by creating an additional post. We return to this issue in Chapter 4 where we consider the current organisation of Kew's senior management.
30. From the above observations on Kew's research, we therefore recommend the following.

RECOMMENDATION 1. Kew should focus its research on the objectives of the institute's research strategy and avoid spreading itself too thinly.

RECOMMENDATION 2. Kew should develop a science research strategy comprising explicitly defined, costed and prioritised research programmes.

RECOMMENDATION 3. Kew should develop more strategic alliances in order better to deliver its science.

RECOMMENDATION 4. Kew should drive up standards through a rigorous review and monitoring of research programmes and projects.

RECOMMENDATION 5. Kew should set up a research support office.

RECOMMENDATION 6. Above all, Kew should give the highest institutional priority to maintaining its collections-based research at world class level.

2.2 Second statutory duty: "Provide advice, instruction and education in relation those aspect of the science of plants with which the Board are for the time being concerned."

Advice

31. Kew has a long and valued history of giving advice free of charge to the not-for-profit research community and to the general public. More recently it has strongly developed its provision of advice and training worldwide to a large number of governmental and non-governmental organisations. Thus Kew annually carries out some 2,500 to 4,500 conservation and sustainability assessments and about ten habitat conservation surveys (see Table 2.1). It also delivers annually some 25,000 people days of capacity building training per year. The work of the Millennium Seed Bank (MSB) is particularly impressive, and the MSB has forged partnerships with more than 120 institutions in 54 countries. Kew has advised many of these partners on how to set up and run seed banks for themselves. This has included, for example, the delivery of germination protocols to a network of 38 national seed banks in sub-Saharan Africa; and the use of seeds from 500 species stored in the MSB for restoration and species recovery programmes worldwide.
32. Kew has recently set up the Kew Innovation Unit (KIU), whose remit is to market Kew's services and intellectual property for profit. These are early days, but the initial results are encouraging, with the KIU being well led, with gross earnings of £600,000, and returning an estimated net

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profit of £112,000 during the first year. The profits are shared among departments within Kew. Since April 2009 Kew has put in place a system that enables it to track the KIU's costs and income effectively, so that in future it will be able to identify surpluses and deficits to an appropriate level of accuracy rather than relying on estimates. The Unit has already yielded benefit in enabling vacant posts that were formerly frozen to be filled. However, there is significant work still to be done to develop the necessary staff skills, and in particular, to embed the KIU into the management of Kew. The distribution of moneys earned between the KIU and the originators of the work appears to be working well, but will need to be kept under review.

33. Importantly, Kew needs to develop a policy on how far such contract-driven research should influence science policy, investment and recruitment, and on how far it should be permitted to divert effort from Kew's core science.

Instruction

34. Kew currently offers a range of education opportunities to Higher Education Institutes, normally through participation in MSc and PhD training. Kew is sensibly planning to reduce the number of these collaborations, concentrating on between two and four such HEIs, perhaps two within the UK and one overseas. The complex nature of these collaborations makes identification of costs and benefits difficult.
35. The three year Kew Diploma is very highly regarded by the 14 or so students who attend it each year, and is greatly respected by employers around the world who regard it as the 'gold-standard' of botanic garden-based horticultural training. Its graduates, almost without exception, move on to successful horticultural careers around the world.
36. Although mostly under the ambit of the Director of Content and Learning, responsibility for these activities lies with different organisational groupings within Kew. They are also managed and financed in different ways, and the review team sees value in bringing them all directly under the Director of Content and Learning. The review team believes that there could be a significant opportunity for Kew to generate useful profits by providing professional training courses for company and governmental clients in fields such as biofuels, food security and the impacts of climate change. The costs of providing such courses would, of course, have to be first assessed, before making any decision as to whether provide any particular course.

Education

37. Kew's achievements in this field are impressive and more improvements are planned. Since 2008, Kew's educational work has been brought together into one department under a newly appointed Director of Content and Learning. Kew is annually visited by 100,000 children in organised school parties and runs about 35 courses and events per year for the public. These attract participants from a wide range of backgrounds. The Wellcome Trust funded the much admired, web-linked "Great Plant Hunt" pack, which was sent out to all state-maintained primary schools. Independent schools are able to obtain the pack on request. It received a very high satisfaction rating. The review group was encouraged to see that, under the new Director of Content and Learning, the financial implications of running an extensive schools programme are carefully being evaluated, and that significant steps have already been taken to increase income to the institution from these activities.
38. The review team noted that contact had been established with officials from the Department for Children, Schools and Families (DCSF) over Kew's educational programme. However, from talking to DCSF officials, the review team believes that Kew could do more to ensure that the

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Department is made more aware of the high quality of work taking place at Kew that is relevant to the DCSF's "Learning outside the classroom" and "Growing schools" programmes. Future plans include the enhancement of Kew's international educational role; the development of a more integrated education offer for adults; the development of more socially inclusive audiences from schools; and the exploration of new technologies for the labelling of plants in the gardens.

39. We also noted that Wakehurst Place provides an inspiring and cost-effective contribution to Kew's education programme.
40. In summary the review team commends Kew's work in providing advice, instruction and education. We make the following recommendations.

RECOMMENDATION 7. Kew should develop a policy on the relation between its contract-driven (Kew Innovation Unit, KIU) and core research.

RECOMMENDATION 8. Kew should develop new professional training courses, where costings and assessment of the market indicates that they will be profitable.

2.3 Third statutory duty: "Provide other services (including quarantine) in relation to plants."

41. The review team was pleased to learn that, thanks to significant funding from Defra, a new quarantine facility is due to open in 2011. This will provide a high level of containment (Level 3) and will provide a service to Kew itself, and to outside users – including HM Revenue and Customs (HMRC), for which it will also provide a 'bonded warehouse'. The facility will also allow the monitoring of International Union for the Conservation of Nature (IUCN) red data book listed plant species and invasive plant species. The review team noted that there are limited opportunities for revenue generation from Kew's quarantine services. It therefore believes that there is neither the need nor the opportunity to expand the quarantine services currently offered. We make the following recommendation.

RECOMMENDATION 9. Kew's quarantine services, once established in their new building, should continue to operate at their normal level of activity.

2.4 Fourth and fifth statutory duties: "Care for their collection plants, preserved plant material, other objects relating to plants, books and records", and "Keep the collections as national reference collections secure so that they are available to persons for the purposes of study, and add to and adapt them as scientific needs and the Board's resources allow."

The herbarium and library

42. The recently opened extension to the herbarium and library is excellent and provides fine facilities for the collections, staff and visitors alike. The extension also provides greater protection against the risk to the collections from flooding. Kew is to be congratulated on having developed such an excellent facility, and Defra on providing significant funding. The collections in the herbarium are superb, and are deservedly internationally renowned. They, together with Kew's other collections, are heavily used. In addition to their use by Kew staff, there are some 28,000 live visits to Kew's collections annually by external users. There were some two million visits on line during 2008/09 (Table 2.3).

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Table 2.3

Use of Kew's collections (Kew Annual Report 2008/09)

Key Performance Indicator	2006/07	2007/08	2008/09
1. Access to the collections:			
live visits	26,608	27,737	27,982
on-line visits	na	200,000	2,050,000
2. Collections digitally catalogued (cumulative)	na	473,000	539,880
3. Status of the collections (% currently accessible)	na	79%	84%

43. The herbarium staff are dedicated but stretched. The review team noted that the filling of some posts in the herbarium was to be funded from KIU income, and welcomed this strengthening of a core activity.
44. The review team noted that herbarium staff carry out both research and curatorial roles. This is unlike the arrangement found in some other major herbaria in the world, such as the Royal Botanic Garden, Edinburgh, the New York and the Missouri Botanic Gardens in the USA, and The Natural History Museum, London, where curation and research are carried out by different groups of staff. We heard arguments in favour of the current arrangement in Kew. First, the range of technical demands arising from the curatorial function is seen to be fairly restricted and so not too onerous. Second, it keeps the researchers in touch with their collections. Third, the herbarium staff like it that way. Arguments that we heard against this arrangement were first that curation and research require different specialist skills, and individuals might shine in one domain but not the other. Second, that by separating curation from research, one is able to raise both to higher standards; to provide training in both; and a professional career path in both. On balance, the review team favours the separation of curation and research, and recommends that Kew considers moving to such an arrangement.
45. The new library extension has provided much-needed additional space for its collections, since the main library had been filled to capacity some ten years earlier. We were told that the library receives some 10,000 visitor days per year from academics, students, conservationists and educators. We noted that the main problems are that the catalogue is not at present publicly available, and that there is a large backlog of conservation work. As with the herbarium, the staff are dedicated but stretched. We heard that Kew recognises the need for the library to raise more money from its collections, for example by licensing its images.
46. We welcomed the priority that is being given to digitising the herbarium collections, since this will greatly enhance their accessibility and use. We noted that some 60,000 herbarium sheets were digitised in 2008/09, bringing the cumulative total to some 540,000 (Table 2.3). Much of this work has been funded by the Mellon Foundation. The review team noted that the other two large herbaria in Britain, those at the Royal Botanic Garden, Edinburgh and at The Natural History Museum, are also being digitised, as are those of the other leading botanic gardens throughout the world. Representatives from all three of the British organisations to whom we spoke recognised the need to develop a single virtual herbarium, both within the UK and across the whole world. The review team agrees that this should happen. There is everything to be said for the three UK herbaria working with each other and with their international partners to agreed international standards and protocols to achieve full interoperability. This interoperability should extend to databases of scientific collections that are being developed in relation to animals, minerals and fossils. The review team learned of the progress that has been

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made in this respect between the Natural History Museum and organisations overseas. This has brought the significant benefit of allowing the Museum to build upon the prior work and investment of these other organisations, especially in the United States. Similar advantages would no doubt accrue to Kew if it were to adopt this strategy.

47. We heard disquieting comments from several different sources that Kew is not easy to engage with on initiatives such as this. This is something that Kew's management should look into. In any event, the review team believes that it is essential for Kew to approach The Natural History Museum and the Royal Botanic Garden, Edinburgh with a view to engaging dynamically and urgently to create an effective, unified, virtual herbarium database, with seamless links to the other important herbaria of the world.
48. We noted also that responsibility for the herbarium, library, archives and art collection lies with one department. The senior Kew staff to whom we spoke said that they were happy with this arrangement, but it did seem to the review team that this ran the risk of spreading the range of disparate activities within the one department too widely, to the possible detriment of some of these activities. The review team urges Kew to monitor the situation carefully, so that if performance dips, particularly in the crucially important herbarium, remedial action can be taken.

Living collections

49. The review team noted that Kew's living collections are an important part of its holdings. They are discussed more fully below in the section on horticulture. They provide a valuable reservoir upon which to draw for public display. They also have a valuable conservation role, for example in the development of propagation protocols for users around the world. The Millennium Seed Bank is a truly outstanding facility whose international impact has been noted earlier in this report. We commend the MSB for having already met its target of holding ten percent of the estimated 250,000 world's wild plant species by 2010. We commend it for its ambitious plans to achieve coverage of 25% by 2020.
50. The review team were impressed by the professionalism, drive and energy with which the MSB is run. We noted that the future funding base for the MSB changes from 2010, and that Kew identifies as one of its top three priorities the funding of the next phase of the MSB. This is consistent with the review team's belief that the maintenance and development of Kew's collections and collections-based research must be the top priority for Kew.
51. On the basis of these observations the review team makes the following recommendations.

RECOMMENDATION 10. Kew should consider whether curation and research should be carried out by separate groups of staff.

RECOMMENDATION 11. Kew should seek to work closely and urgently with the Royal Botanic Garden, Edinburgh and The Natural History Museum, London to create a unified virtual herbarium within the wider context of the development of a unified global herbarium.

RECOMMENDATION 12. Kew should engage vigorously with the international community to achieve this end.

RECOMMENDATION 13. Kew should keep under review the arrangement whereby the herbarium, library, archives and art collection are managed within the one department.

RECOMMENDATION 14. Kew should pursue as a top priority its policy of developing Phase Two of the Millennium Seed Bank.

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2.5 Sixth statutory duty: "Afford to members of the public opportunities to enter any land occupied or managed by the Board, for the purpose of gaining knowledge and enjoyment from the Board's collections."

Kew as a visitor attraction

52. Kew has many beautiful and outstanding displays both at Kew itself and at Wakehurst Place, and these are extensively visited by the public. The Kew site is deservedly a World Heritage Site, with iconic buildings, including the Palm House, the Temperate House and The Princess of Wales Conservatory, and with its fine living collections, extensive parkland and wide range of horticultural displays. Both the Kew site and Wakehurst Place offer a range of events, including concerts, outdoor sculpture exhibitions and festivals which attract many visitors.
53. Visitor numbers at the Kew site have grown from just over 860,000 in 2001/02 to a plateau of about 1.3 million from 2005/6 to 2008/9. At Wakehurst Place visitor numbers rose from 200,000 in 1991 to a peak of 475,000 in 2007/8, making it Britain's most visited National Trust property.
54. Kew conducts extensive and high quality visitor research which shows that a very high proportion of visitors to the Kew site rate their experience overall to have been excellent (69% of paying visitors, 77% of Kew members in the October 2009 exit survey). Despite this, the ratings for secondary services at Kew are much lower, particularly in catering and retail, which fewer than 10% of visitors rated as excellent. Kew is a member of the Association of Leading Visitor Attractions (ALVA), an organisation with both public sector and private sector members, the criterion of membership for which is to receive more than one million visitors a year. ALVA routinely surveys the range of facilities offered by its member organisations, from which it derives ratings. Annual benchmarking against 17 other member organisations over the last six years shows Kew to score slightly above average on 'absolute excellence of visit' but below average on secondary measures such as catering and retail, with a particularly marked dip in 2007/08.

The Kew site

55. Kew has used visitor research to give it a clear picture of its visitor profile and its catchment areas, and the features of Kew that attract different segments of the visitorship. Thus families with young children come to Kew as a safe and enjoyable place which they can share, and where they can also learn. Single professionals and retired adults enjoy the beauty of the gardens, including the parkland landscape, the flower beds and heritage buildings. Management recognises that there are under-represented groups, including ethnic minorities and people from socioeconomic groups C2, D and E. Management is developing ideas to tackle this, such as the re-development of the website and taking Kew out beyond its walls.

Managing the landscape

56. Management recognises that there are other matters to improve in the visitor offer and is developing plans to deal with them. Some of these relate to buildings and capital projects, others to levels of service. With respect to the former, the Victoria Gate, which is the most heavily-used entrance to the Kew site, is recognised to be poor. It does not give the sense of scale, quality and excitement that is required. Second, several of the heritage buildings are in a bad state of repair, and in the case of the Temperate House, its condition raises health and safety concerns for visitors and staff alike. Urgent restoration is essential if closure is to be avoided,

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with significant reputational damage to Kew and to the UK, given Kew's World Heritage Site status. Kew has developed a refurbishment and maintenance programme to address these problems, which it intends to pursue as and when funding permits. (See also Chapter 3 for a discussion of the financial implications.)

57. Management recognises that the overall public offer at the Kew site is not easy for the average visitor to understand. There is a complicated array of gardens, glasshouses, galleries, shops and catering facilities that do not form a pattern that is readily apparent. Visitor research shows that less than a quarter of visitors rate the information available to guide them round the site as excellent. A landscape master plan is being developed at the Kew site in order to remedy this situation.
58. Management has stressed that it wishes to bring Kew's science and conservation messages out into the public gardens more strongly, and this too will figure both in the landscape master plan and in the Breathing Planet Programme.
59. Management also recognises that too many staff at the Kew site are occupied with issuing tickets to visitors at the entrances, and not enough of them are available to help and guide visitors within the body of the gardens. The plan to introduce on-line ticket sales is intended to release staff into the interior of the gardens, and to make them more visible.

Catering

60. On the catering side, management recognise that the four catering outlets, although much improved, need to be improved still further. The catering contract is currently being re-tendered with a view to determining the best forward strategy. Kew's intention is that the new contractor should differentiate the offer further among the catering outlets; should invest significantly in their development; and should look for new opportunities on the Kew site. The retail operation now has a credible three-year growth plan for the shops on site as part of which Kew plans to develop offsite sales through its website.
61. All of these planned changes, in the views of the review team, are sensible and welcome. Nevertheless, the review team believes that there are other aspects of the public offer that need to be addressed.

Interpretation and engagement with visitors

62. First, the overall rationale behind the current visitor offer on the Kew site in delivering Kew's mission is not clear. We are aware that RBG, Kew is developing a landscape master plan at the Kew site, but, at least in the preliminary version that was available to the review team, this plan lays most of its stress on the physical layout of the Kew site, and gives very little idea of what the overall interpretative plan might be. We are also aware that the Breathing Planet Programme, which is now being developed in more detail, recognises the need to develop an interpretation strategy. The review team sees this to be particularly important.
63. In developing its master plan, Kew has choices to make about what to display by taxonomic group, what by habitat type, what by theme (such as evolution), what to display within a special garden (such as the secluded garden), what within glasshouses, and what within parkland. Overlying all of this, Kew has to make choices as to how to bring out its fundamental conservation messages. In the review team's view, all of these questions must explicitly addressed by ensuring that there is an interpretation master plan as a major component of the landscape master plan.

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64. Second, the interpretation techniques that are used at Kew are basic, confining themselves mostly to small labels and plaques, and the information that they convey is limited, both in quantity and in the kind of information that is conveyed. We learned of plans to use modern electronic communication techniques to improve matters, such as a code-reading facility which would enable bar-coded plant labels to be downloaded onto visitors' mobile phones. This would enable visitors to have access to information of their choice in a way that does not intrude upon the plants on display. We welcome this and encourage still further development in this area.
65. However, we noted that there is very little by way of introduction or orientation for visitors as they come to each of Kew's main attractions. This is particularly true of the major glasshouses. Indeed, depending upon the door by which a visitor enters some of the major glasshouses, he or she may receive no introductory information at all. The same can be said of some planting areas. There is much that could be learned from the high quality display techniques that are used in the world's top museums. Kew could set a world lead in adapting such techniques to the context of a major botanic garden. This would powerfully reinforce Kew's ability to convey major messages, whether it were about plant conservation, or about any other plant-related topic on which Kew wished to expand.
66. Third, a creative approach to display and interpretation could, in the review team's view, lead to significant new strategic opportunities at Kew. We were told by several members of Kew staff that they wish to make Kew's science more accessible to their visitors. Kew currently lacks a major all-weather facility that would allow this. To the review team it appeared that there is a need to create a new indoor facility that would bring together displays of plants in glasshouses with high quality interpretation, and to do so in a public meeting space in which visitors can engage directly with plant scientists and conservationists. Depending upon the design of such public spaces, they could also host exhibitions and public events. A facility displaying some of these aspects exists at the Royal Botanic Garden Edinburgh. Such a facility would bring a number of benefits. First, it would have the potential to attract visitors throughout the year, particularly during the winter when visitor numbers are typically low. Next, it could strongly promote public engagement in contemporary issues of science-based plant conservation, and thereby support Government policies, including those on access and inclusion. Finally, it could provide a significant indoor public space to house large exhibitions and public events, for which Kew does not at present have the facilities. Kew has already demonstrated the public interest in high impact exhibitions by mounting very successful, outdoor exhibitions in the past, for example on Chihuly in 2005 and on Henry Moore in 2008. There should therefore be a market for indoor exhibitions with similar impact.
67. We learned that Kew plans to develop a £6 million facility called the People and Plants Centre as part of the upgrade of the Victoria Gate entrance. This could achieve some of what is suggested above. We noted in this respect that Kew has several exhibition galleries scattered across the site, which are small and located at a considerable distance from one another. These include the Kew Gardens gallery, the Shirley Sherwood Gallery of Botanical Art, the Marianne North Gallery, the Museum No.1, and the Nash conservatory. Both the Shirley Sherwood Gallery and the Marianne North Gallery are excellent, but none of Kew's galleries is large enough to house a major exhibition if Kew wished to mount one, and they do not collectively provide a major draw for the public.
68. The review team recognises, of course, that the creation of a new and potentially expensive facility of this sort would create additional financial burdens at a time of financial stringency and against a background of other areas of higher priority for Kew. Nevertheless, we believe that this option is worth exploring as something that might be achieved within the next ten years.

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The review team believes that such a project could be financed through fund-raising, although it would be important for such fund-raising to cover both setting up and running costs. The cost of such a project would, in the review team's view, depend very much upon its scale, and whether it involved new build or the re-working of an existing building.

69. Fourth, we heard a view from within Kew, that Kew is somewhat reserved in the way it delivers its messages. We agree with this. To the review team, Kew seems to adopt a quiet and understated, even a modest approach to much of its public offer. This will be appreciated by many, but may well fail to attract potentially large numbers of visitors from a wider spectrum. We see merit in Kew adopting a more confident, punchy tone, and would encourage Kew to do market research on this issue as it develops an interpretation master plan.
70. Arising from all of the above, the review team found it difficult to identify who was responsible and accountable to the Director for the development and implementation of the interpretative vision and for the overall public offer. In the team's view there is a need for a single member of the senior management team (Corpex) to whom such responsibility and accountability is assigned. Without this, it is difficult to see how a clear and unified interpretation master plan will be devised and driven forward, and how this will be integrated with the overall visitor experience.
71. We note, also, that Kew has many fine heritage buildings, which contribute significantly to Kew's recognition as a UNESCO World Heritage Site. The financial and maintenance aspects of the historic buildings is discussed in Chapter 3, but we note here that they provide a central part of Kew's offer and must feature prominently in the landscape master plan. This can be best be achieved by ensuring that Kew's landscape management plan and its World Heritage Site management plan are fully integrated.
72. From the above discussion, we make the following recommendations.

RECOMMENDATION 15. Kew should develop an interpretation master plan as a central feature of the landscape master plan for the Kew site.

RECOMMENDATION 16. Kew should improve the quality and scale of interpretation at the Kew site by the use of world class interpretation techniques.

RECOMMENDATION 17. While formulating its landscape master plan, Kew should consider the development of a high impact indoor public facility that allows for the display of living plants with a significant interpretative element, with public spaces for dialogue between Kew's experts and its visitors and for large exhibitions and public events.

RECOMMENDATION 18. Kew should create a post within its senior management team, the holder of which is responsible and accountable to the Director for the development and delivery of the interpretation master plan and for the entire public offer.

RECOMMENDATION 19. Kew should ensure that the heritage buildings at the Kew site are treated within the landscape master plan as an important and integrated part of the visitor offer.

Wakehurst Place

73. The review team were impressed with the public offer at Wakehurst Place. The mission at Wakehurst Place is the same as that for the whole of RBG, Kew and it delivers this mission well. The offer is less complex than that at the Kew site, and so is perhaps easier for the visitor to

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grasp. In any event, there is a high repeat visitorship, and surveys of visitors show that a high proportion rate their visit to be 'very enjoyable'. We noted the intention at Wakehurst Place to demonstrate sustainability in practice, for example by turning to energy production through wood-chip combustion technology and by putting this on public display. We also noted plans to increase visitor numbers to one million per year, but with a sensitivity to the impact that this might have both on the site and on the neighbourhood. We noted that in addition to its heritage and substantial horticultural offer, Wakehurst Place provides an unparalleled example of High Weald Landscape and includes a site of special scientific interest (SSSI) and two nature reserves.

74. The review team also noted and supported the wish to make the Millennium Seed Bank more central to the visitor offer. We believe that there would be particular merit in the long term of developing a new facility within an enlarged MSB where visitors could become more fully aware of and engaged in its work.
75. The review team noted that Wakehurst Place has a track record of being a test bed and innovator for projects that are subsequently adopted at the Kew site. These have included methods of interpretation; the provision of learning programmes for schools and families; and the introduction of composting on site as a visitor attraction. Finally, the review team noted that RBG, Kew is considering the development of a landscape master plan for Wakehurst Place. The review team supports the need for such a plan. The most significant issues facing Wakehurst Place are its future funding, and its relationship with the National Trust, both of which are covered in Chapter 3.
76. From the above observations, we make the following recommendation.

RECOMMENDATION 20. Kew should improve the impact of the Millennium Seed Bank as a part of the visitor offer at Wakehurst Place, and in the long term develop a public facility at the Millennium Seed Bank that would offer more engagement for visitors with its scientific work.

Horticulture at Kew

77. All major botanic gardens face the challenge of balancing visual impact against botanical interest in their public offer. Kew is no exception and has the additional problems of its size, leading to considerable public expectation, and poor topography and geology at Kew which makes growing of some plants difficult. Those interviewed were clear in their view that Kew's presentation has very much improved over the past three to five years, and that many aspects of the offer at Kew and at Wakehurst Place are truly world class. The displays in The Princess of Wales Conservatory and the Arboretum were often singled out in this respect. The Tree Top Walk was regularly cited as an example of where a new public attraction has integrated well with horticulture.

The Plant Collections at Kew

78. Kew has a number of world class living plant collections of which it can be justifiably proud. The review team did, however, detect a lack of strategy or succession planning with regard to collections which had once been superb, often owing to the work of a talented member of staff, but in which quality had proved difficult to maintain after the individual had moved on. Those we talked to frequently mentioned these 'disappointing' collections and the general view was that they should either be improved, or reduced. There was agreement that a site as large as Kew simply could not be filled with specimen examples of interesting plants of known provenance, but equally that poor plants and planting should be considered unacceptable.

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Access to Kew's Horticultural Material

79. Kew's living collection is immense, regarded by many as the largest in the world, and is usefully recorded on Kew's LivColl database, which is accessible through Kew's website. It comprises plants that are part of the public offer and others that are maintained behind the scenes (at both Kew and Wakehurst Place). Some are heavily protected by the Convention on Biological Diversity (CBD). As mentioned above, exhibitions provide excellent opportunities for the public to see some of these 'hidden plants'. The review team heard on many occasions that access to these plants is difficult, and made more so by the very strict interpretation of the Convention taken by Kew. This is irritating to some sectors of the horticultural community, including highly experienced and professional growers, especially as Kew remains one of the few sources of new material (arising from its expedition programme).
80. Kew is a public body and as such has a responsibility to serve all sections of the public, including enthusiastic amateurs, professional growers and the horticultural industry. Other botanic gardens, we were advised, take a more constructive approach to interactions at this level, with, for example, agreements for growers to grow and propagate material under licence. Of course, there will always be plants that for legal (CBD) or strategic reasons (e.g. potential invasiveness) should not be released, but a more collaborative attitude in this area by Kew would be greatly welcomed, would improve the chances of survival of much of this material, and may, in a small way assist UK commercial horticulture.

Provision of Horticultural Advice

81. Over the years, Kew has developed an effective, if not particularly transparent, system for providing horticultural advice to the public – often centred about plant identification. We were told that horticultural societies normally enjoy excellent relations with Kew, but some concern was expressed that individuals or groups which do not have a 'contact' at Kew can sometimes experience difficulties in obtaining horticultural advice.
82. Notwithstanding these comments from stakeholders, the review team believes that Kew should not become over-focused on the interests of the gardening community (which are well-addressed by the Royal Horticultural Society).

Training in Horticulture

83. There was universal agreement amongst those we consulted that the Kew Diploma continues to be the Gold Standard of horticultural training (see elsewhere in this report). Validation of qualifications of this type is a perennial concern, but the review team considered that, with Kew's strong international reputation, any external validation of this qualification would be superfluous. Some concern was expressed that Kew's focus on conservation and sustainability issues had resulted in some students being ineligible for RHS bursaries, as the projects they were planning often contained little practical horticulture.

Staff in Horticulture and Public Experience (HPE)

84. HPE staff include a number of individuals with strong international reputations, and who enjoy justifiably high profiles in the public and scientific arenas. Collectively they represent a set of horticultural expertise unparalleled elsewhere in the world. Nevertheless most members of staff find themselves (and their budgets) heavily stretched, with an increasing workload resulting from Kew's move into large public exhibitions, major new activities such as restoration ecology, and the ever-increasing demands of health and safety legislation. The achievement of HPE over

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the past few years has been remarkable, but the review team was concerned that this had been carried out by staff and budgets very much at their limits. Any further unfunded expansion by the institution could have serious consequences to the overall effectiveness of HPE, and to the morale of its staff.

85. Those we consulted judge the training given to HPE staff as very good, but mention was made of an invisible dividing line between the horticultural and scientific staff not seen in other botanic gardens. This extended to expeditions in which, the review team was told, few members of the horticultural staff participate. This was to the detriment of both training and the obvious contribution that horticulturists could make to the enterprise. In the past the Horticultural Taxonomy Teams were considered to have been very effective in bringing scientists and horticulturists together, as well as in engaging expert growers and other public groups.

Engagement of Kew with the Horticultural Community

86. As one of the major horticultural practitioners in the UK the review team was concerned that Kew is often poorly represented on national and international horticultural networks and groupings, and that it infrequently takes the leading role. Many we consulted were of the view that this was an historical effect and that, since Kew had built up its own international networks in the past, joining more recently formed networks was perhaps unnecessary. There is no doubt, however, that Kew could make a major contribution to these networks. Nearer to home, the review team was disappointed that representation by Kew – at a senior level – on the Royal Horticultural Society Council has fallen into abeyance.

Horticulture and the Breathing Planet Programme

87. As Kew is one of the world's major horticultural institutes the review team was surprised that the Breathing Planet Programme puts so little emphasis on horticulture. Certainly it underpins many of the BPP Strategies but is only overtly mentioned in Strategy 7. Some we consulted expressed concern that horticulture was not mentioned in BPP Strategies 1 and 5, where either the living collections themselves, or knowledge of growing plants are pivotal.
88. In the light of the above, we make the following recommendations.

RECOMMENDATION 21. Kew should consider the current workload on the Horticulture and Public Experience staff, and particularly the effect of major exhibitions and new programmes.

RECOMMENDATION 22. Kew should develop a strategy for the major living collections, and make it clearer in the public offer which are specimen plants and which are included solely for display purposes.

RECOMMENDATION 23. Kew should do more within legal and practical constraints to make plant material and information on this material available to the public.

RECOMMENDATION 24. Kew should work to bring together more closely the horticultural and scientific staff, and should ensure a higher profile for horticulture in the Breathing Planet Programme.

RECOMMENDATION 25. Kew should become more involved in national and international horticultural networks and societies.

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Resourcing and Income Generation

89. We summarise here trends in Kew's income and expenditure since the last major external review was carried out in 2001. We also review Kew's plans for future income generation and expenditure. We assess whether these plans will ensure a sustainable financial future for Kew, and in particular for its world class science.

3.1 Sources of income

Grant-in Aid

90. Grant-in-Aid to Kew from Defra provides a major income stream, to support both operating and capital costs. Table 3.1 summarises operating and capital grants from the time of the last Quinquennial Review in 2001/2 up to 2009/10.

Table 3.1

Kew's Grant-in-Aid (£ million)

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Operating Grant	14.299	14.299	17.583	17.299	17.957	17.600	17.600	19.850	17.600
Capital Grant	5.430	2.330	7.200	7.600	7.600	7.600	7.600	8.750	10.900
Total Grant	19.729	16.629	24.783	24.899	25.557	25.200	25.200	28.600	28.500

91. The table shows that the total Grant-in-Aid has risen from £19.7 million in 2001/02 to £28.5 million in 2008/09, a rise of 44.5% and of 18.2% in real terms (inflation adjusted). The operating grant rose from £14.3 million in 2001/02 to £17.6 million in 2009/10, an increase of 23.1% in cash terms and of 0.7% in real terms. The operating grant was maintained at a flat cash level over most of these years with an uplift of £3.3 million between 2002/03 and 2003/04. The capital grant has varied year by year in line with the capital projects being undertaken by Kew at the time, such as the extension to the herbarium and library and the new quarantine building.

92. The 2001 Quinquennial Review of Kew recommended annual increases in Grant-in-Aid at least in line with inflation. This was accepted as desirable by Defra, with the caveat that its achievement would depend on resources and priorities at both Government and Department level.

93. We were told by Defra officials that Kew's Grant-in-Aid funding has been favourable in comparison with several of the other bodies whom it sponsors. To find an external comparator, the review team looked at the Grant-in-Aid allocated by DCMS to the national museums and galleries that it sponsors. This seemed to the review team to be a relevant comparison since many of these bodies have both a scholarly and a public display function, although too close a comparison should perhaps not be made since some of the DCMS uplift was to compensate for the loss of admissions revenue in those national museums and galleries that ceased to charge for admission. Over the period 2001/2002 to 2009/2010 the total Grant-in-Aid allocation to all DCMS sponsored museums rose from £245 million to £377 million, a rise of 54.4% in cash terms and of 26.4% in real terms (inflation adjusted). This increase is higher than Kew's corresponding increases of 45% and 18.2% over the same period.

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94. However, given that some of the uplift in DCMS Grant-in-Aid to national museums and galleries was to compensate for the loss of admissions revenue following the abolition of admissions charges, a better comparator with Kew would be years 2003/4 to 2009/10. This shows increases in DCMS Grant-in-Aid to national museums and galleries of 34.6% in cash terms and 15.4% in real terms and for Kew a rise of 15.0% in cash terms and a 1.5% cut in real terms.
95. In view of these figures the review team believes that it would be reasonable for Kew's Grant-in-Aid to fluctuate over the years broadly in line with an average of DCMS-sponsored museums and galleries. Later in this chapter, when reviewing Kew's sponsorship arrangements, the review group recommends that Defra liaises with DCMS over some aspects of the Government's sponsorship of Kew. We therefore recommend that, in deciding on the level of Grant-in-Aid that it makes to Kew, Defra should take into consideration the overall trends in the Grant-in-Aid made by DCMS to its sponsored museums and galleries.

Self-generated income

96. During the period 2001/02 Kew has taken commendable steps to increase the income that it derives from sources other than Grant-in-Aid. This income has more than doubled from £11 million in 2001/02 to £23.4 million in 2008/09.
97. Kew's total income over this period has thus risen from £30.5 million to £52 million, a rise in cash terms of 70%. Taking inflation into account, this is equivalent to a rise of 42%. Expenditure has risen over the same period in line with these figures, and reflects both cost inflation and increased levels of activity.
98. Overall during the period 2001/02 to 2008/09 there was a fall from 65% to 55% in the percentage of Kew's income that derived from Grant-in-Aid, and a corresponding rise from 35% to 45% in the percentage of self-generated income.
99. The review team looked at the four main components of Kew's self-generated income, namely visitor admissions; catering and retail; the Kew Innovation Unit and fund-raising.

Admissions income

100. We noted that visitor admissions income has grown from £3.0 million in 2001/2002 to £5.5 million in 2008/09. Adult admission prices have risen ahead of inflation since 2001/02, but visitor numbers have remained flat since 2005/06, suggesting that any further increase in adult price above the current £13 is unlikely to generate more income. We learned that Kew has tried more elaborate pricing structures in the past, but that these did not boost admissions revenue.
101. In this context, the review team noted that Wakehurst Place, excluding the Millennium Seed Bank, costs Kew about £2.2 million per annum. Given that Kew has to service some 375,000 National Trust Visitors who gain free admission, the National Trust's annual payment of some £80,000 represents a small contribution to Kew's costs. In the face of this situation, Kew has done well to increase visitor income at Wakehurst Place from £250,000 in 2000/01 to about £671,000 in 2009/10. Additional opportunities to increase revenue, for example, by charging for car parking, are being explored.

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Catering income

102. Commercial income from catering has also grown. Catering has been managed by external catering companies under contract. We noted that there are plans to improve the catering offer further, under a new catering contract, but growth is unlikely to continue in the immediate future. The current signs are that there will be only modest increases in catering income for the next few years.

Kew Enterprises

103. Other commercial income generated from the public offer is managed through Kew Enterprises, which is a separate company that covenants its profits to RBG Kew. Its activities include retail, both on site and on line; the licensing of the Kew brand; the Kew Explorer (a vehicle for taking visitors around the Kew site); special events and venue hire. Where it has not contracted out, Kew is appointing experienced professional specialists to improve performance, and has produced a credible growth plan under which net income will grow from its 2005/06 peak of £1 million to £1.4 million in 2011/12.

The Kew Innovation Unit

104. The Kew Innovation Unit (KIU) was set up in April 2008 to produce additional income from Kew's scientific and conservation work. It generated £600,000 gross income during its first year of operation, and £1.2 million for the next eight months to November 2009. The KIU team predicts that it will build the Unit up in the next two years to achieve a £3 million per annum income, which it would aim to sustain thereafter. We commend the KIU for its work, but believe the target to be a very challenging one given the staff input required, the lack of a standard time management system (which in our view should be introduced), and the difficulty of maintaining a balance between core science and income-generating science facing the scientists at Kew. We noted earlier the KIU's net income during its early months of operation was an estimate rather than a firm figure, and it is therefore difficult at present to provide estimates of growth in net income in coming years. If one assumes based on the current margins that net profit were to be 20% of gross income, a £3 million gross income would yield £600,000 net profit. In the long term, the review team believes that there is considerable potential to grow the income stream from the KIU to generate a valuable net profit.

Fund-raising

105. Kew's fund-raising is carried out under the auspices of the Kew Foundation and Friends (KFF), which is an independent body that remits the money it raises to RBG, Kew. Kew's fund-raising has been impressive. The Trustees' written submission to the review team shows that KFF has raised £49.8 million since 2001/02. We note that the fund-raising operation was reinforced in November 2009 when a new Director of Development was appointed. We noted that Kew has ambitious plans to raise £250 million over the next ten years. This target would require an average of £25 million per annum to be raised over the next ten years, which is well over twice the peak figure of £10.6 million raised in 2007/08. Although this level of performance may be achievable in the long run, the review team believes that it will take a considerable amount of time to build up to it, particularly in the current difficult economic climate. Given that other revenue-generating activities are not likely, on the evidence discussed above, to produce an uplift of more than £1 million per annum by 2011/12 (catering £0.1 million, Kew Enterprises £0.4 million, Kew Innovation Unit £0.45 million), it is clear that the great burden of increasing self-generated income will fall on Kew's fund-raising.

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106. Much as the review team would like to be proved wrong, we believe that Kew's fund-raising target is over-ambitious, at least in the short term. We urge the newly appointed Director of Development to assess what will be achievable in fund-raising by the end of 2011/12. We believe that Kew would be doing extremely well to increase its fund-raising by £4 million beyond its 2008/09 level of £8.8 million, and we recommend that Kew takes this as its target in the first instance.

3.2 Savings

Efficiency Savings

107. The review team believes that there is scope to make considerable efficiency savings at Kew, and that insufficient attention has been given to this in the past. We found no evidence that Kew has an overall efficiency strategy. It needs to develop such a strategy that outlines all the steps that Kew needs to take to make the most of all its resources. Kew needs to assess its current approach to achieving efficiency; to identify areas of weakness; and to ensure that it understands the various factors that influence its efficiency.
108. In particular, we found that there is no central procurement function at Kew, the present system having been developed on an *ad hoc* basis. Some items are purchased centrally, but many goods and services are purchased by Kew's various business units independently of each other. This has led to a proliferation of suppliers, to a failure to assess potential volume discounts, and to increased work for the back office functions. Further work needs to be done to assess the size of procurement savings that could be achieved, but initial estimates suggest that these could be up to £400,000 per annum. The main area of expenditure for goods and services is within estates, and the review team noted that good work has recently been done in this area to rationalise the procurement process, to reduce the number of suppliers and to manage the contractors more effectively through robust contract management. We also noted that there are plans to recruit a procurement professional. We strongly support such an appointment, and urge that systems are set up to ensure to deliver significant procurement savings.

Maintenance of buildings

109. The maintenance of Kew's heritage buildings is discussed more fully in the next section of this chapter. We here note that there has in the past been a lack of planned preventive maintenance at Kew, and an under-investment in maintenance in its built estate, both heritage and non-heritage. The result has been that when reactive maintenance has eventually been undertaken, the costs have been higher than if it had been undertaken proactively as part of a planned programme. The Temperate House provides a striking example. It has not received substantial maintenance since the early 1980's and has now reached a state where its total restoration is essential if it is not to be closed to the public for health and safety reasons.
110. We note that a planned preventive maintenance programme is being drawn up, and welcome this. Under such a plan, it may be possible to achieve some savings by mothballing low priority buildings, but these savings will be offset by expenditure on high priority heritage buildings such as the Temperate House and the Palm House, which are essential to the delivery of Kew's mission. Kew's assessment is that over £20 million will need to be spent over the next five years to carry out a complete programme of work on Kew's large glasshouses. We understand that this is a preliminary estimate, and that a more accurate estimate of the cost will not be available until a full survey of these glasshouses has been carried out.

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111. The review team does not believe that a planned maintenance programme will deliver efficiency savings in the short term, although it should do so in the long term.

Information Technology

112. The review team also reviewed Kew's Information Technology (IT) capability. Management clearly recognises that the IT support for back-office functions, notably finance and Human Resources (HR), is poor and that there are many opportunities through IT for improvement and efficiency across all of Kew's operations. A large proportion of finance and HR transactions are at present carried out manually by clerical staff, and as a result Kew lacks readily accessible finance and HR data for management purposes. Kew has now developed an IT strategy to address this and other problems, and also to bring benefits to other major areas of activity such as science, collections management and commercial programmes. We commend Kew for developing this strategy, which we are satisfied is well thought out. It is important that systems are put in place to ensure that its implementation is well managed, and that it will deliver considerable improvements in operation and also efficiency savings. The strategy is designed in modules, each to be developed in turn as resources allow, and building on the experiences gained from the development of earlier modules in the sequence. Management estimates that that the new IT systems will deliver £31 million of savings over the next ten years, with savings of £1.3 million in the first two years.

Staffing levels

113. Finally, the review team noted that staffing costs account for nearly 80% of its operating expenditure. The number of full time staff equivalents has risen steadily since 2001/02 from 564 to 715 in 2008/09. The review team were told that there were several reasons to account for this growth in numbers, including the need to handle an increased number of visitors; an increase in revenue-generating staff; and an increase in the number of staff funded by research grants. Nevertheless, it is a matter of concern that such a high proportion of the operating expenditure goes on staff costs. This is clearly an area that management needs to keep under review.

114. The review team was impressed with Kew's volunteer scheme, under which more than 500 volunteers contribute to a range of Kew's activities, including its programmes for schools, families, the elderly, the disabled, information and horticulture. Kew's volunteer scheme brings benefits to Kew, the volunteers and to the public alike, and at low cost to Kew. We believe that there is scope for this programme to grow still further.

115. Our overall conclusion is that since the Quinquennial Review in 2001 Kew has recognised the need to develop its business and to become more commercial. A key part of this process has been to change the culture and skill set within the organisation so that it becomes more innovative, proactive and commercially focussed. The journey is not complete and although the review team noted and welcomed the fact that there are senior members of staff who have the skills and experience to lead these changes, they are few in number. We believe that Kew should instil a more commercial and proactive culture throughout its staff, particularly below senior management levels, in order to support Kew as it moves forward. Improvements in IT and back-office functions will not generate the expected benefits if they go ahead without corresponding changes in culture and skills among the relevant staff. The work involved in bringing about this change in culture and skills will be significant and should not be underestimated.

3.3 Wakehurst Place and the National Trust Lease

116. As mentioned above, Wakehurst Place costs Kew some £2.2 million to run annually. The Gardens and Woodlands of Wakehurst Place were leased to the Ministry of Agriculture Fisheries and Food on a 99 year lease in 1965 for a peppercorn rent. A lease covering the mansion at Wakehurst Place was put in place in 1972. Responsibility for management of Wakehurst Place under the terms of the two leases was transferred from the Minister to the Board of Trustees of RBG, Kew in 1984. The leases require the Trustees to maintain and repair the estate and mansion. The lease allows National Trust members to visit the estate and mansion free. Unlike nearby National Trust properties, such as Nymans, Chartwell and Sheffield Park, which are owned and managed by the National Trust, Wakehurst Place does not receive visitor credits from the National Trust for the visits that it receives from National Trust members. Were it to do so, it is estimated that Kew would receive about £1 million per annum in visitor credits.
117. This situation is clearly unsatisfactory from Kew's point of view. The 2001 Quinquennial Review concluded that there was little room for manoeuvre over the leases on legal grounds, a conclusion that the present review confirms. However, the review team believes that there is scope for improving the situation. The Quinquennial Review of 2001 recommended that Kew should seek to improve its working relationship with the National Trust with a view to arriving at greater mutual benefit. The review team was encouraged to learn that this working relationship has indeed improved over recent years. During the first twenty to thirty years of the lease the relationship between the National Trust and Kew had been very much that of landlord and tenant, with the terms of the lease being applied rigidly, and with no possibility of mutually agreed variation. In recent years both Kew and the National Trust have moved towards a relationship in which they see themselves as partners, with both members of the partnership deriving benefit from their relationship. Although the National Trust has stated on several occasions that it is not willing to change its position on free admission for its members, it has indicated a willingness to be more flexible on other matters, such as the uses to which properties on the estate might be put. (The lease currently prohibits the occupancy of dwellings on the estate by non-staff members, but it would benefit Kew if this provision could be relaxed to allow for commercial lettings.)
118. Despite the improved working relationship between Kew and the National Trust, Kew will have to decide in due course whether it would wish to seek renewal of the lease when it terminates in 2064. Although in some respects this may seem to be a long way off, it is a question that will seriously affect Kew's attitude as to whether it will make major capital investments in Wakehurst Place between now and the termination of the lease. This will be an unattractive proposition for Kew if the lease is not eventually renewed since any new buildings or other projects arising from such capital investment would revert to the National Trust and would be lost to Kew. It is hard to imagine that Kew would wish to renew the lease on anything like the present terms, since it brings with it so many disadvantages, and it is therefore a possibility that Wakehurst Place will experience little if any capital investment over the coming years. This would lead to an inevitable deterioration in the visitor offer.
119. Against this, the review team heard that the National Trust wishes to see Wakehurst Place flourish under Kew's management, and that Kew's Trustees see Wakehurst Place as central to Kew's mission. With this in mind, it is the review team's view that it would be to both Kew's and to the National Trust's advantage to negotiate now a new lease to replace the existing one. Should such negotiations fail, then the review team believes that the costs to Kew of maintaining a presence on the land it leases at Wakehurst Place cannot be justified, and that Kew should mothball Wakehurst Place and plan an exit strategy.

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3.4 The Millennium Seed Bank

120. The MSB's operating costs over the past nine years have averaged £4.1 million per annum. They were funded until the end of 2009 by the Millennium Commission. The external funding stream that has been going to the MSB to assist in the running costs ceased from January 2010 and Kew will now either have to fund the MSB from its own resources; seek alternative sources of funding, particularly by building the Millennium Seed Bank Partnership; or downsize or even close the MSB. For the reasons set out in Chapter 2, the review team believes the MSB should be of very high priority for Kew, and it recommends that Kew should be given additional interim funding by Defra, which tapers down over three years, to enable Kew to gather the additional funding support that it needs. We recommend that £3 million be given for this purpose in 2010/11 and £1.5 million in 2011/12.

3.5 Planning for a sustainable financial future at Kew

121. If Kew is to have a sustainable financial future, then at the very least it must receive the funding that it needs to carry out its statutory duties. Ideally this baseline funding should be sharply distinguished from the funding that would be required for additional, desirable (rather than mandatory) activities during the coming years. Kew has ambitious plans in this respect, and they are set out in a range of documents such as successive Corporate Plans, papers on the Breathing Planet Programme, and a written submission that the review team received from Kew's Trustees. The review team therefore tried to distinguish between those of Kew's activities that are statutory duties on the one hand, and those that are desirable additional activities on the other, and to investigate the costs of both. In so doing we encountered a number of difficulties.

122. First, it is very difficult to define the quantity and quality of work that needs to be carried out to ensure that a particular statutory duty is fulfilled. Thus Kew's statutes require it to "carry out investigation and research into the science of plants", and to "afford to members of the public opportunities to enter any land occupied or managed by the Board for the purpose of gaining knowledge and enjoyment from the Board's collection." The satisfactory fulfilment of these duties is clearly open to a wide range of interpretation. We therefore suggest that it would be helpful for Kew to agree with Defra the quantity and quality of work that is needed to fulfil each of its statutory duties. In doing so Kew's national and international importance should be taken fully into account, and appropriate benchmarks set. An example of such a benchmark is given earlier in this report where Kew's research outputs are compared with those of other leading institutions with scientific collections of plants (see Table 2.2).

123. Second, we recommend that once the quality and quantity of this work has been agreed, Kew should routinely provide a prioritised business plan setting out, first, the costs of fulfilling its statutory duties, and second, the costs of those activities that Kew judges to be desirable, but that are additional to its activities through which it fulfils its statutory duties. We recommend that the business plan should set out the effect of quantified variations in funding, either positive or negative, on Kew's plan of work. We recommend also that such a business plan is produced routinely as a complement to Kew's Corporate Plan, which currently forecasts income and expenditure at a highly aggregated level.

124. In making this recommendation, the review team notes that Kew does not currently have robust data on the costs of many of its activities, and so cannot at present readily provide such a business plan. Kew recognises this, and is working to improve its management accounting systems so that it will be able to provide better information on the costs of its activities, both statutory and desirable additional activities.

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125. Third, the review team was told that Defra historically has notified Kew of the size of the Grant-in-Aid that it will receive in any one financial year at best three months before the beginning of the financial year, and at worst some three months into the financial year. This impairs Kew's ability to plan effectively. We understand that Defra has recently taken steps to notify Kew's Grant-in-Aid further in advance. We welcome this, and we recommend that in future Defra confirms the level of Grant-in-Aid for a particular financial year at least six months before the start of that year. In less difficult economic times one would also expect Defra to indicate the possible level of Grant-in-Aid for the year beyond.
126. In the absence of a business plan of the kind described above, the review team found it difficult to assess the effects that any future variations in Kew's Grant-in-Aid would have on its ability to carry out its statutory duties on a sustainable basis. The review team has therefore had to make subjective judgments on this question. The team had to balance on the one hand a case made by Trustees in their written submission to the review team for a substantial and sustained uplift in operating and capital grant, and on the other the strong pressure by the Government to reduce public expenditure. The review team recognises that significant uplifts in Grant-in-Aid for Kew, however cogently argued for by its Trustees, are very unlikely to be a realistic outcome in the present economic climate. The review team also believes, however, that a cut in Kew's Grant-in-Aid would result in Kew not being able to fulfil its statutory obligations with respect to scientific research, and public access to some of its heritage buildings. We report in Chapter 2 on the fall in Kew's science outputs over recent years, and on how in our view the Kew's research base is in danger of falling below its critical mass. We also report in Chapter 2 on the likelihood that the Temperate House, which is one of the most important components of Kew's visitor offer will have to close for health and safety reasons if restoration work is not undertaken.
127. It is against the above background that the review team recommends a funding strategy for the next ten years that should enable Kew to weather the very difficult economic climate in the next three years and to put it in the strongest possible position to develop in the years beyond, when and if conditions ease. We believe that Kew requires special assistance because financial support for its collections and for its specialist researchers and curators cannot be turned on and off like a tap without real damage. We therefore recommend a short-term series of measures until 2012/13 which set Kew challenging targets for efficiency savings and self-generated revenue, coupled with special funding support from Defra until 2012/13 that will promote Kew's efficiency drive; will pump-prime fund-raising for the Temperate House; and will enable Kew to move to a new funding base for the Millennium Seed Bank.
128. From the end of 2012/13 until 2020 the review team recommends that, as noted earlier, in deciding on the level of Grant-in-Aid that it makes to Kew, Defra should take into consideration the overall trends in the Grant-in-Aid made by DCMS to its sponsored museums and galleries. We recommend equally that Kew pursues with great vigour its present policy of increasing its self-generated income from now until 2020. We urge that during this period Kew should receive a stable level of Grant-in-Aid to which it adds an ever-increasing amount of self-generated funding.
129. The review team makes the following recommendations.

RECOMMENDATION 26. Kew should agree with Defra the quantity and quality of work that it needs to perform, judged against international benchmarks, to fulfil its statutory duties, and cost such activities.

RECOMMENDATION 27. Kew should further improve its ability to cost and report on all of its activities.

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RECOMMENDATION 28. Kew should produce an annual costed and prioritised business plan to complement the Corporate Plan, that distinguishes statutory from desirable additional activities and that assesses the effects of quantified fluctuations in income on the plan.

RECOMMENDATIONS 29. Kew should deliver efficiency savings of £0.5 million per annum by the financial year 2012/2013.

RECOMMENDATION 30. Kew should keep under review its staffing levels and costs to ensure that they are appropriate to Kew's activities as set out in the business plan.

RECOMMENDATION 31. Kew should increase its net revenue from commercial and other activities by £1 million per annum by 2012/2013.

RECOMMENDATION 32. Kew should increase by 2012/2013 its net return from fund-raising from the current £8.8 million per annum to £13 million per annum.

RECOMMENDATION 33. Kew should renegotiate the Wakehurst Place lease with the National Trust with a view to assuring a long-term, sustainable future there, or, if this is unsuccessful, mothball Wakehurst Place and plan an exit strategy.

RECOMMENDATION 34. Defra should confirm its Grant-in-Aid to Kew six months before the start of a financial year, and indicate at the same time, when economic conditions allow, the level of the Grant-in-Aid for the year after.

RECOMMENDATION 35. Defra should maintain Grant-in-Aid to Kew at £25.2 million per annum up to and including 2012/2013, this to consist of an operating grant of £17.6 million and a capital grant of £7.6 million – the capital grant to support, first, the introduction of Kew's IT strategy, thus promoting sustainable efficiency savings, and second to pump prime fund-raising for the Temperate House.

RECOMMENDATION 36. Defra should make a one off grant of £3 million in 2010/11 and of £1.5 million in 2011/12 to enable Kew to make the transition to a new funding base for the Millennium Seed Bank.

RECOMMENDATION 37. From 2012/13 onwards, Defra should ensure that Kew receives an operating grant that at least maintains its value in real terms, and in addition take into consideration the overall trend in the Grant-in-Aid made by DCMS to its sponsored museums and galleries when it decides on the level of Grant-in-Aid that it makes to Kew.

3.6 Heritage management and support

How the estate is managed

130. The Kew site has more than 40 listed buildings including the Palm House, the Pagoda, Queen Charlotte's cottage, the Nash Conservatory, some houses on Kew Green, and many other buildings. Some of them, such as the Grade I listed Palm House, are iconic and internationally famous. Others, such as the Joseph Banks Building or the kitchens of Kew Palace, are not part of the public offer. Kew has been granted World Heritage Site status for its unique combination of heritage buildings and landscapes. Together they constitute the essence of Kew as a visitor attraction.

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131. Kew has recognised that a considerable improvement in the management of its estates is needed. The maintenance programme currently operates on an *ad hoc* basis, with repair and maintenance work being carried out as and when issues arise, rather than on a proactive and preventive basis. This method of working is inefficient and does not adequately support the effective management of Kew's heritage assets. Kew's management has clearly recognised that major changes are necessary to address these problems and to modernise the estates service. The review team welcome this, and supports Kew's plans to develop a proactive maintenance programme; to restructure the estates department; to ensure that the right professional skills are available within the department; to improve procurement processes; and to manage contractors more effectively through robust contract management. The review team also welcomes Kew's introduction of quadrennial surveys of its buildings to provide objective evidence on which to base its maintenance programme.
132. Some of the stakeholders with whom the review team spoke, questioned whether senior staff at Kew either themselves possessed or had sufficient access to heritage and cultural expertise, as is required by virtue of Kew's World Heritage Site status. The review team believes that it is important that Kew should have access to such specialist expertise, particularly as it develops the landscape master plan for the Kew site. We believe that Kew will need to continue to supplement its own in-house expertise from time to time, working with English Heritage and other providers in order to ensure that the landscape master plan both protects Kew's unique heritage and shows it off at its finest.

Coping with the backlog

133. Owing to under-investment in the past, there is now a large backlog of maintenance and repair work at the Kew site. Kew management estimates that this will cost some £80 million, and that clearing the backlog would take some ten years. In the light of this, Kew has prioritised the work required on the basis of the urgency of the repairs required, and the importance of each building to Kew's operation. From this Kew has identified the Temperate House and the Palm House as top priority. Kew estimates the cost of their maintenance and restoration to be over £20 million. Both buildings are Grade I listed, are critical to the visitor experience and are key contributors to Kew's World Heritage Site status. The Temperate House is the most urgent, since its deteriorating condition will soon, if it continues, constitute a health and safety risk, and will result in it being closed to the public. Work must start within the next two to three years. The review team considers Kew's top priority projects to be well chosen.
134. Kew recognises that other maintenance projects are of lower priority. These include the listed buildings on Kew Green that are used for administrative purposes. The review team learned from representatives of other organisations with responsibility for numerous heritage buildings of their policy of reducing the maintenance of low priority buildings to the minimum required to ensure that they remained "weather and wind tight". This policy of mothballing low priority heritage assets is one that the review team thinks that Kew should adopt where necessary.

Resourcing issues

135. As argued in the previous section, a switch to planned maintenance will not immediately result in savings, although in the long term considerable efficiency savings should result. The review team considered a number of measures that might be taken to fund the top priority components of the maintenance programme, and from its discussions within Kew and with stakeholders, we see three principal sources of funding. The first is fund-raising. We have heard that other botanic gardens have successfully funded the restoration of heritage glasshouses

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through fund-raising. This is in contradistinction to the view that is often expressed that it is difficult to raise funds for routine maintenance. This latter statement may well be true for the routine maintenance of unremarkable buildings, but it is unlikely to be true for the major restoration of high profile buildings such as the Temperate House and the Palm House. We were encouraged to hear from the Director of Development that he believes that such iconic buildings should be attractive to donors. We therefore believe that their restoration should be of high priority within Kew's fund-raising programme.

136. The second source of funds should be Defra. The review team accepts the view put to it by Kew that the success of such a fund-raising campaign would be impaired if potential donors perceived that they were being asked to make up for a failure by the Government to provide Kew with adequate core funding. This argument is particularly strong in the light of Kew's World Heritage Site status. This obliges Defra to comply with the requirements of the Protocol for the Care of the Government Historic Estate issued by DCMS in 2003, under which Defra must ensure that Kew has a planned programme of repairs and maintenance and that biennial conservation reports are prepared. Defra is also responsible under the UNESCO World Heritage Convention of 1972 for ensuring that Kew is protected and conserved for future generations. Given these obligations, the review team recommends the levels of Grant-in-Aid until 2012/13 set out in the previous section of the report, and recommends also that part of the capital funding is explicitly applied to the restoration of the Temperate House. This in itself would give public recognition of the Government's support for Kew's high priority heritage buildings.
137. Third, the review team believes that there is potential for generating more revenue from Kew's buildings. We learned that Kew is considering using the Joseph Banks Building as a revenue-generating conference centre. We welcome this, and see advantages to Kew in working with private sector partners to share risk, to access funding and to increase the speed of development. We see the need for Kew to look at all of its buildings and assess how they contribute to Kew's offer, and how they might generate more revenue. Since the buildings and the land on which they stand are Crown Property and are integral to Kew's World Heritage Site Status, they cannot be sold. However, some of Kew's buildings could be used for commercial residential lettings. Given Kew's location in a wealthy residential part of London, this might provide useful income. Some of the buildings that might be used for this purpose are currently occupied by Kew staff. We were told by Kew that it is important for some staff to live close to the Gardens given the nature of their work, or in case of emergency. The review team recommends that Kew gives priority to assessing how many staff it is essential to have occupying accommodation on site for these purposes, and that it uses residential buildings that do not have this essential function for commercial residential letting.
138. In summary we make the following recommendations.

RECOMMENDATION 38. Kew should complete the development of a prioritised, planned maintenance programme and start to implement it.

RECOMMENDATION 39. Within Kew's overall fund-raising campaign, it should launch a fund-raising programme to secure the restoration of top priority heritage buildings, namely the Temperate House and the Palm House.

RECOMMENDATION 40. Kew should develop a plan for optimising the income potential of its estates drawing on best practice from other bodies with comparable heritage assets.

RECOMMENDATION 41. Kew should ensure that it has access to the necessary specialist heritage expertise as it develops its landscape master plan.

3.7 How the scientific and other endeavours of RBG, Kew support the objectives of Defra and Other Government Departments (OGDs)

139. The review team saw much evidence that Kew supports the objectives of Defra and OGDs. For example, Kew helps the Government to fulfil its responsibilities in relation to the Convention on International Trade in Endangered Species (CITES) and in relation to the Convention on Biological Diversity. It advises Defra on the International Treaty on Plant Genetic Resources for Food and Agriculture; the UN Convention to Combat Desertification; and the UN Framework on Climate Change. It also advises on capacity building and conserving plant species in overseas territories. Kew delivers much more than this, however. In their submission to the review team, Kew's Trustees provided an assessment of Kew's contribution to Defra's objectives and to the objectives of other Government Departments – see Appendix 3. They also provided an assessment of how Kew contributes to the progress of ten out of the Government's 30 Public Service Agreements (PSAs) – see Appendix 4. The review team heard a convincing presentation from the Head of the Millennium Seed bank (MSB), about the way in which the MSB supports Defra objectives.
140. The review team is convinced that Kew's work in these areas is important, that it supports the objectives of Defra and of several OGDs, and that its scientific research and its work on biodiversity conservation are of an international scope and impact that are to be admired. However, meetings that the review team held with several officials from Defra and from OGDs painted a different picture. The predominant view that came from these Government Departments is that Kew is not getting its message across effectively to them. The result is that Kew is seen to be only marginally contributing to Defra's and OGDs objectives.
141. During the course of its work, the review team came across examples of other non-departmental public bodies (NDPBs), whose input to the objectives of their sponsoring department is clearly understood and who have developed successful and effective relationships with their sponsoring departments. In each case this has been the result of the investment of time and effort over a long period of time on the part of the NDPB to build up close working relationships with key individuals in the sponsoring department. The result has been that the sponsoring department has developed an understanding of the NDPB's ability to contribute to its objectives, and a willingness to inject significant funding to increase this contribution.
142. The review team did not find such a situation to exist in the relationship between Kew and Defra. The Director and Chairman of Trustees devote considerable time and effort in establishing relations with Defra Ministers and senior officials, but it cannot be left to them alone. There are no arrangements in place whereby RBG, Kew is frequently and routinely in touch with Defra officials at the appropriate level of detail about how its scientific, curatorial and conservation work can best contribute to Defra's agenda. As a result, some Defra officials expressed the view that Kew was not sufficiently in touch with Defra's agenda. Equally, it should be said, some RBG, Kew staff expressed the view that Defra was not sufficiently in touch with Kew.
143. It is clear to the review team that a facility must be established for allowing frequent contact between RBG, Kew and Defra at several different levels. The initiative for this must lie with Kew, but Defra should encourage and support such a development by making the appropriate officials available to participate in such communication. We recommend therefore that Kew sets up an external relations unit. This should be part of a larger initiative whereby Kew strengthens its ability to communicate its work and mission to a wide variety of audiences.

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144. The precise form that this unit should take should be for Kew to decide. A number of different models for handling external relations exist in other NDPBs for Kew to consider. These range from having a Director of External Relations post at a senior level, to having one or more mid-level posts working as assistants to the Director. We do not wish to prescribe a particular solution, since Kew would need to choose a model most appropriate to its situation. We do urge, however, that such a post or posts should be at a sufficiently high level so that the post-holders can talk authoritatively and knowledgeably with their opposite numbers in Defra. We also urge that the remit of the post holders should not be confined to Defra, but that it should extend to key OGDs and to other major stakeholders both within the UK and overseas. We suggest that Kew and Defra consider the mutual benefit of arranging for secondments between the two organisations. We also urge that Defra assists Kew in helping it to set up contacts with the appropriate people within OGDs.

145. We therefore make the following recommendation.

RECOMMENDATION 42. As part of a wider initiative to improve its communications Kew should set up a dedicated External Affairs unit to improve the effectiveness with which it interacts with Defra, with OGD's and with other major stakeholders.

3.8 Existing sponsorship arrangements

146. Defra is the sole sponsoring department for Kew. It, and its predecessor department, the Ministry of Agriculture, Fisheries and Food, has sponsored Kew for many decades. It makes an annual Grant-in-Aid to Kew covering both operating and capital costs. It also signs off the annually updated corporate plan. Defra delivers small additional amounts of funding to Kew in relation to the fulfilment of specific contracts.

147. It is clear that Defra officials and ministers regard Kew as something very special, to which they on more than one occasion have applied the phrase "the jewel in Defra's crown". Indeed, in announcing the present review of Kew in July 2009, the Secretary of State for Environment, Food and Rural Affairs made the following highly supportive statement about Kew.

"Kew is a world class organisation – an iconic part of the nation's cultural heritage and a scientific institution of global renown. Its contribution is more significant than ever given the importance of conserving and harnessing biodiversity and our natural resources against the challenges of climate change."

148. Despite these expressions of enthusiasm for Kew, the review team found diverging views within Defra as to what it should be sponsoring. Some expressed reluctance to spend money on the maintenance of Kew's extensive range of buildings of great heritage importance, given that this did not lie firmly within Defra's remit. Others took a wider view, under which Kew was seen as a multi-faceted national asset, contributing to the nation's culture and education.

149. Taking this line of thought further, Kew will certainly have to spend significant sums of money on maintaining its heritage buildings in the coming years so that they can continue to be accessible to millions of visitors. In making them accessible in this way Kew is clearly contributing to the wider government agenda, and more specifically to the objectives of DCMS. Such a situation is not unique to Kew and Defra. For example, the review team was told that the Ministry of Defence (MoD) is responsible for 38 Grade 1, 129 Grade 2* and 615 Grade 2 listed buildings, the maintenance of which, it could be argued, is not central to the MoD's mission but is nonetheless contributing to the Government's objectives on culture and heritage.

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150. The review team believes that this lack of clarity about the sponsoring role of Defra is neither helpful to Defra nor to Kew. It has considered a number of alternative models.
- i) Retain the existing arrangement, but with stronger interaction between Defra and Kew by the creation of an external relations unit within Kew as described earlier. This might produce a greater clarity and understanding on both sides, but in the review team's view would be too weak a measure on its own.
 - ii) Transfer sponsorship to another department. This would simply displace the problem rather than resolve it. Kew's role is most closely aligned with that of Defra among Government Departments, but the review team considered whether there could be a case for Kew transferring to DCMS. An argument for such a move would be that by so doing, Kew would sit alongside a number of cultural bodies of similar size that function both as visitor attractions and, in several cases, centres of scholarship and research, both pure and applied. An argument against such a move would be that Kew's strong conservation agenda would not sit readily within the DCMS remit, and is much more closely aligned with that of Defra. For these reasons the review team believes that Defra is more appropriate as Kew's sponsoring department than DCMS. However, we do recommend that Kew aligns itself more closely with the UK's national museums and galleries so that it can be more fully aware of practice and policies in this important adjacent area. The National Museums Directors' conference, to which Kew once belonged but then left, could be a useful vehicle for making such an engagement, as will Kew's continued active participation in the World Collections Programme.
 - iii) Have more than one sponsoring department. Under this model, Defra could be the sponsoring department for Kew's science-based conservation and DCMS for its public offer and its heritage buildings. Arguably, other departments might sponsor other facets of Kew's work: for example, DCSF might sponsor Kew's educational work. The review team believes that such an arrangement would be complicated and unworkable. We reject this option unreservedly.
 - iv) Have Defra as the lead sponsoring department, through which all Grant-in-Aid would flow, but have an inter-departmental liaison group, involving DCMS and possibly another Government Department, that would provide expert input and policy advice on their respective areas of responsibility. Such an arrangement is operating at the British Library, which also has interests that spread across those of several Government Departments. We believe that this option is particularly worth exploring further because it is clear that Kew is unlike any of the other many NDPB's that Defra sponsors. Kew is the only one that is a major visitor attraction with important cultural and heritage components. Defra does not have the experience and expertise to deal authoritatively with these aspects of Kew, and both Defra and Kew would benefit from inputs from DCMS in these areas.
 - v) Recognise Kew as a national asset that contributes to the objectives of several Government Departments. In so doing, the Government should develop a clear picture of what it expects Kew to deliver for the nation, and should channel Grant-in-Aid to Kew through Defra to fulfil agreed objectives not only of Defra but of identified OGDs. There should be agreement between Defra, these OGDs and Kew as to what these objectives are, and they should be explicitly recognised. Defra and appropriate OGDs could co-sign Kew's funding agreement; a similar model to that already operating with respect to English Heritage. Arguments for such an arrangement are that it would reflect reality; that it is in line with the Government's emphasis on cross-departmental delivery; and that it could be flexible in the face of periodic changes in the apportionment of responsibilities among Government Departments. An argument against such an arrangement is that it would create an

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additional layer of complexity. The review team also heard the argument that it might be difficult to define with sufficient precision the performance indicators under such a model. The review team was not convinced by this argument. From the evidence cited earlier, it is clear the Kew already contributes to defined objectives of several OGDs, and there is no reason why this should not be codified. The review team believes therefore that it should be perfectly possible to operate such a model rigorously.

- vi) Separate the scientific side of Kew's work, which would be funded by Defra, from the public side run as a separate, self-funding charity. This might give greater focus and clarity to the relationship between Kew and Defra, but the review team encountered two main arguments against such an arrangement. The first is that Kew's scientific work makes an essential contribution to its public offer. Without Kew's authoritative scientific knowledge, it is argued, it would not be possible to run such a richly diverse public botanic garden. This argument will be strengthened if Kew's science makes a more overt contribution to the public offer as outlined in Chapter 2. The second argument is that the cost of maintaining the heritage buildings would make it impossible for the public side of gardens to be run as a self-funded exercise. Given these arguments, the review team does not favour this option.
 - vii) Divide the funding for Kew into two strands: Grant-in-Aid for core activities and infrastructure in fulfilment of Kew's statutory obligations, and contract funding to meet specific Defra objectives. To a very limited extent this situation already exists, with Defra funding a small amount of Kew work by contract. One can see a tighter alignment between Kew's performance and Defra's objectives if such contract-based work were to increase. Defra is free at present to buy specialist advice and information from those suppliers that provide best value for money. The expansion of such a contract-based method of funding, by introducing an element of competition, could sharpen up Kew's performance. However, the review team is not convinced that there is scope for much growth of contract-based work between Kew and Defra. Moreover there is the danger that a growth of Defra-funded contracts could diminish the Grant-in-Aid component of support to an extent that Kew was not able to maintain its fundamental expertise and facilities at the required level of excellence. Such a dependence on contracts, which tend to be short-term, would also jeopardise Kew's ability to undertake long-term programmes of work, of great strategic importance, such as the Millennium Seed Bank.
151. From the above discussion, the review team sees merit in aspects of models iv) and v), and suggests that they should form the basis of a new kind of sponsoring arrangement for Kew. It therefore makes the following recommendations.

RECOMMENDATION 43. Defra should remain the lead sponsoring department for Kew.

RECOMMENDATION 44. The Government should develop a clear overall picture of what it expects Kew to deliver for the nation, and should set up a system which recognises explicitly the contribution that Kew makes through the Grant-in-Aid that it receives from Defra to the objectives both of Defra and of OGDs.

RECOMMENDATION 45. An inter-departmental liaison group should be set up, initially involving Defra and DCMS, to ensure that both Defra and Kew receive the expert advice on matters of policy and best practice that lie outside Defra's but within DCMS's remit.

Chapter 4: Kew's Present and Future Performance

152. This chapter builds on the evaluation summarised in the two previous chapters, and addresses the third and fourth terms of reference of the review. These are:

“to consider...whether the services, activities and organisational arrangements at RBG, Kew remain the most effective means of achieving its own, Defra’s as well as Government-wide objectives, such as those relating to climate change, conservation and biodiversity, overall science policy, and the Operational Efficiency agenda.”

and

“to assess what changes, if any, are needed in the light of the findings of the review to improve the quality, effectiveness and value for money of RBG, Kew services, and to set out the rationale and to recommend appropriate options to Ministers. These should address how best to ensure a sustainable financial future for RBG, Kew and its world class science.”

153. The review team concludes from its investigations that the services, activities and organisational arrangements at Kew do in general remain the most effective means of achieving its own, Defra’s, and Government-wide objectives. In this report we have set out a number of recommendations that, if implemented, would in our view improve the quality, effectiveness and value for money of Kew’s services. Some of these are organisational, some procedural and some financial.

154. From the earlier chapters of this report, it is clear that there is much to commend in the way that Kew currently operates. Kew delivers much that is of great value, both in pursuance of its own objectives and in pursuance of Defra and Government-wide objectives. It is also clear that Kew has changed and improved its performance significantly over recent years, thanks to the work of the Trustees; successive Directors and a dedicated work force. The present Director and his senior staff are working hard to improve standards of performance still further and we commend them for this. Several of the recommendations for change in this report reinforce changes that Kew itself sees to be necessary, and indeed is implementing. For example, Kew has been strengthening its senior team through making new appointments, and in the review team’s view these appointments will undoubtedly help Kew to raise its game.

155. However, there are additional areas for improvement that the review team believes to be necessary and to which we wish to draw attention. Several of the recommendations in the earlier chapters of this report fall into this category. We believe that they reveal some underlying themes, which we explore further here.

4.1 Focus

156. We have commented earlier in the report that Kew is stretched and is in danger of trying to do too much. Kew has rightly identified three top priorities for the immediate future as the upgrading of its IT capability; securing funding for phase two of the Millennium Seed Bank; and the restoration of the Temperate House. Beyond this, however, there are areas where we see a lack of focus. Kew’s scientific research is one such area, and it is for this reason that the review team recommends that Kew should develop a science research strategy with explicitly defined and prioritised research programmes. More widely, we see a potential danger arising from Kew’s Breathing Planet Programme.

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The Breathing Planet Programme (BPP)

157. The BPP is a scalable, strategic framework which encompasses all areas of Kew's work and whose aim is to facilitate the delivery of Kew's mission, which is "to inspire and deliver science-based plant conservation worldwide, enhancing the quality of life". The BPP has several benefits. It has a valuable unifying effect, bringing together the scientific and public offer side of the institution; it enjoys warm support from several of the Kew staff to whom we spoke; and it directs Kew's work to the very important goal of worldwide plant conservation. However, it appears to involve a significant expansion of Kew's work in areas such as conservation planning and management and an international scale, and also in restoration ecology. Although we were told that Kew's intention that such an expansion should be self-funding, there is a risk that it might divert resources and attention from Kew's great and central strengths, which are its collections and its collections-based research. The conservation market place is crowded, and there are several excellent research facilities worldwide that specialise in conservation planning and management and in restoration ecology. It is for this reason that we urge Kew that, as it puts the BPP into practice, it should focus as a top priority on its key strengths that flow from its collections. It should forge strategic alliances with world-leading research institutes in conservation planning and management, restoration ecology and other relevant disciplines, and only expand its own work in these areas when it can do so without detriment to its collections and the work that is carried out in relation to them.

Collections, research and systematics

158. It is important to be clear in the above paragraph that the phrase "collections and collections-based research" refers to any aspect of Kew's research that flows from its collections, living or preserved. It should not be seen as being restricted to taxonomic research. Nevertheless, Kew's taxonomic research is particularly important given the worldwide shortage of professional taxonomists. This has been highlighted most recently in the report from the House of Lords Science and Technology Committee Inquiry into Systematics Biology Research and Taxonomy, published in July 2008. This report makes it clear that the taxonomic expertise of Kew, as one of the leading publicly-funded systematics and taxonomy institutions in the UK, is crucial in the conservation of biodiversity and other priority policy areas. In the review team's view, Kew must above all retain and strengthen its taxonomic base. Given that the application of taxonomy to plant conservation underpins much of the Breathing Planet Programme, we see the strengthening of this taxonomic base as being crucial to the Programme's success.

159. Further to this, it is clear to the review team that there would be a great benefit if Kew and The Natural History Museum and the Royal Botanic Garden, Edinburgh, were to work together much more closely in the field of plant taxonomy. Taken together, their resources and expertise are significantly above anything found elsewhere in the world. They would be a truly powerful force. There is already co-operation between the plant taxonomists in the three institutions, and, as described in Chapter 2, the review team has noted and welcomed the intention to develop a unified virtual herbarium among the three institutions. We also noted that a series of meetings to discuss closer co-operation has been instituted. This is to be welcomed, and the review team would encourage all three institutions to ensure that these discussions take a strategic view. In doing so, we would urge the three institutions to produce an agreed policy and plan for their curation and plant-based taxonomic research. This could identify some areas for joint working, others for complementary working and still others for independent work. We would hope that at least some major joint programmes of work would emerge. This will be a significant undertaking and will require input from a senior level in all three institutions. The review team believes that, if successfully carried out, its beneficial effect will be profound.

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4.2 Driving up standards

160. The review team believes that still more work has to be done by Kew to drive up standards if it is to remain world class. There need to be new internal procedures for monitoring Kew's performance of its science and shaping its direction. A new level of professionalism has to be introduced into the management of the public offer and into communication and external relations. Benchmarking should become routine across all of Kew's main areas of activity. It is with this in mind that the review group makes its recommendations on the management of Kew's science programmes; the separation of curation and research; and the appointments of two people with overall responsibility to the Director respectively for science and for the public offer.
161. The review team is not convinced that the previous practice of having large-scale but infrequent external reviews of Kew is the most effective way to drive up standards. We have encountered other models in other institutions, such as having smaller, more frequent reviews that successively focus on a particular area of institutional activity. We have referred earlier to the practice for reviewing science programmes that is currently emerging for research funded by research councils. We think there is merit in exploring such models further.

4.3 Engaging with the stakeholders

162. Kew works closely with botanic gardens, natural history museums, universities and seed banks around the world. It works with Government Departments, NDPBs, NGOs and many other bodies. The review team heard several expressions of warm regard for Kew's work from representatives of such organisations with whom it spoke. However, the review team also heard a disquietingly large number of comments expressing reservations about Kew's willingness to engage, and about the effectiveness of such engagement. These came from Defra itself, from several OGDs, and from other NDPBs. If there had only been one or two such comments, the review team would not have given them weight, but they were too numerous to be dismissed. We heard comments that it was difficult to engage in active collaboration with Kew; that Kew did not show leadership in the international arena, for example in EU initiatives that involve science collections; and that Kew is detached from networks involving peer organisations.
163. To the review team, these are issues to which Kew should pay considerable attention. We recommended earlier in the report that Kew's external communications should be strengthened. This, we believe, should go hand in hand with a culture change so that Kew is uniformly seen to be a fully collaborative leader among partners. This will allow the formation of powerful strategic partnerships, which in turn will greatly increase Kew's impact.
164. Equally, the review team believes that there needs to be a culture change within Defra, whereby Defra consistently and unambiguously recognises that its Grant-in-Aid to Kew properly supports the performance of all of Kew's statutory duties, and not just those that fit most comfortably within Defra's current objectives.

4.4 Management structures

165. Kew has a senior management team (Corpex) with 15 members. This has the advantage of including a large number of senior staff in management's top decision-making, and so of engendering a culture of participation. We understand the Director introduced this structure soon after he took up post with this in mind. Nonetheless, a group of this size does have disadvantages. It may not be able to take tough decisions as easily as could a smaller group. It also makes it more difficult to achieve a unified approach to the visitor offer, or to the overall science remit, since responsibility for these is spread among several different members of

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Corpex. Furthermore, it provides the Director with a very large managerial span, with 15 senior members of staff who report directly to him.

166. The review team recommends that the size of Corpex should be greatly reduced. Its members should include the two people with overall responsibility respectively for the public offer and another with overall responsibility for Kew's science referred to above. In addition, one or more posts should be created at the appropriate level to improve Kew's external relations. There would be a need to restructure Kew's top management, both to provide a clear and logical set of reporting lines, and also to avoid a growth in the number and overall cost of posts.
167. Finally, we note that, although any member of Corpex can potentially deputise for the Director when he is away, in practice it is the Director of Corporate Operations and Finance who deputises for the Director in such situations. This raises two issues of principle. First, the review team believes that the person acting for the Director in his absence should be a senior scientist, since it is important that the acting Director can speak authoritatively on Kew's main areas of plant science and conservation. Second, we believe it is good practice for there to be a separation of duties between the Director and the chief administrator, thus providing Trustees with assurance that there are checks and balances at the most senior management level.

4.5 Finance

168. For Kew's financial future to be sustainable, and for its science to remain at world class level, it needs to generate more income for itself and to achieve greater efficiency savings. Recommendations on how to achieve this are given earlier in the report. As we have also emphasised, in the review team's view, it is essential to Kew's future that Defra continues to maintain its Grant-in-Aid to Kew at its current level and that it supplements the grant specifically to help Kew make the transition to new funding arrangements for the Millennium Seed Bank. Without this support, Kew's future will be threatened. Its world class science base, already greatly stretched, will decline below the critical level; a major public attraction, the Temperate House, will have to be closed to the public; and the future of the Millennium Seed Bank will be in jeopardy. If both Defra and Kew deliver what is being recommended, the future of Kew will indeed be sustainable and its science will continue to be world class.
169. From the above discussion, the Review Team makes the following recommendations.

RECOMMENDATION 46. Kew should become significantly more outward-looking by forging strategic alliances with leading EU systematics and other research institutions. In so doing it should take on a more high profile and leadership role, particularly within EU consortia of taxonomic institutions.

RECOMMENDATION 47. Kew should seek to develop with the Royal Botanic Garden, Edinburgh and The Natural History Museum, London an agreed policy and plan for their plant-based taxonomic research and curation.

RECOMMENDATION 48. Kew should strengthen its senior management by reducing the size of the senior management team and by changing the deputising arrangements at the most senior level.

RECOMMENDATION 49. Defra and Kew should consider the most appropriate form of reviews for the future in order to continue to drive up standards.

RECOMMENDATION 50. Defra should consistently and unambiguously recognise that its Grant-in-Aid to Kew properly supports the performance of all of Kew's statutory duties, and not just those that fit most comfortably within Defra's current objectives.

Appendix 1. organisations and Individuals Consulted

Government Departments

Department for Environment, Food and Rural Affairs

Including:

Huw Irranca-Davies, Minister for Marine and Natural Resources
 Dame Helen Ghosh, Permanent Secretary
 Mike Anderson, Director General Strategy and Evidence Group
 Professor Robert Watson, Chief Scientific Adviser
 Peter Unwin, Director General Natural Environment Group
 John Robbs, Director Wildlife and Countryside
 Dr Peter Costigan, Head of Natural Environment Science Division
 Dr Miles Parker, Deputy Chief Scientific Adviser
 Dr Emma Hennessey, Head of CSA's Team, Defra
 Dr John Garrod, Kew Sponsorship Team, Defra
 Tom Taylor, Programme Director, Public Value Programme
 Callton Young, Director, Operational Efficiencies Programme

Department for Business, Innovation and Skills

Including:

Professor John Beddington, Government Chief Scientific Adviser

Department for Children, Schools and Families

Department for Culture, Media and Sport

Department of Energy and Climate Change

Department for International Development

The Foreign and Commonwealth Office

Ministry of Defence

Royal Botanic Gardens Kew

Including:

Lord Selborne, Chairman of Trustees (until October 2009)
 Marcus Agius, (Chairman of Trustees from October 2009 and Chairman of the Kew Foundation and Friends Board)
 The Board of Trustees
 Professor Stephen Hopper, Director
 Andrew Burchell, Director of Corporate Operations and Finance
 All members of Kew's Corporate Executive
 Tanya Burman, Chair of Kew Enterprises
 Several members of staff in small group or one to one meetings
 The Trades Union Side of Kew
 A meeting to which all Kew staff were invited
 Email submissions invited from Kew staff

Other organisations

Biotechnology and Biological Sciences Research Council
Botanic Gardens Conservation International
Botanic Gardens Trust Sydney Australia
The British Library
The British Museum
British Waterways
The Cambridge University Botanic Garden
The Centre for Ecology and Hydrology
The Commission for Architecture and the Built Environment
The Crown Estates
Earthwatch
The Eden Project
The Food and Environment Research Agency
Ellwood and Attfield
English Heritage
The Environment Agency
Historic Royal Palaces
International Council on Monuments and Sites
The Forestry Commission
The Joint Nature Conservation Committee
The Met Office
The Missouri Botanical Garden
The National Archives
The National Botanic Garden of Wales
The National Council for the Conservation of Plants and Gardens
The National Trust
Natural England
The Natural History Museum, London
The New York Botanical Garden
Research Councils UK
The Royal Botanic Garden Edinburgh
The Royal Horticultural Society
The Royal Parks
The Shanghai Botanic Garden
The Tate
The University of Oxford Botanic Garden

Individuals Consulted

Christopher Brickell
Dr Christopher Grey-Wilson
Dr Phillip Cribb
Lord Krebs
Lord May of Oxford

Steering Group for the Review of the Royal Botanic Gardens Kew

Dr Miles Parker, Deputy Chief Scientific Adviser, Defra

Dr Emma Hennessey, Head of CSA's Team, Defra

Dr John Garrod, Kew Sponsorship Team, Defra

Anne Marie Millar, Director of Finance, Defra

John Robbs, Director Wildlife and Countryside, Defra

Sarah Green, English Heritage

Steve Hillier, Department for International Development

Professor Stephen Hopper, Director, Kew

Andrew Burchell, Director Corporate Operations and Finance, Kew

Andrew Murphy, Director of Finance, Imperial College, London

Professor David Ingram, former Chair of the Darwin Initiative

Professor Alistair Hetherington, University of Bristol and member of Defra's Science Advisory Council

Appendix 2. The Breathing Planet Programme Strategies

1. Accelerating discovery and global access to plant and fungal diversity information

Discovering, collating and accelerating global access to essential information on plant and fungal diversity, through fundamental science, enhanced collection programmes and data-capture, including GIS baseline information and novel identification tools such as web-based floras and DNA barcoding.

2. Mapping and prioritising

Identifying plant and fungal species and regions of the world most at risk of losing their wild diversity, to enable priority setting for conservation programmes, with the application of cutting edge IT and GIS approaches where they can enhance this process.

3. Conserving what remains

Helping implement global plant and fungal conservation programmes such as creation of new sustainably managed areas through established and new partnerships in countries richest in diversity and geographical extent of remaining wild vegetation.

4. Sustainable local use

Expanding plant and fungal diversity knowledge and Kew's innovative science programmes to the identification and successful use of locally-appropriate plant species under changing climatic regimes on agricultural, urban and suburban lands.

5. MSB partnership and seed banking

Extending the Millennium Seed Bank's global partnership programmes to secure in safe storage 25% of the world's plant species by 2020, targeting species and regions most at risk from climate change.

6. Restoration ecology

Establishing a global network of partners in restoration ecology to facilitate the use of seed banks and other botanic garden resources in the urgent repair and re-establishment of damaged native vegetation.

7. Inspiring through botanic gardens

'Kew for You' – delivering enjoyable, inspiring experiences and horticultural displays that transform people's understanding worldwide of plant diversity and conservation and their relevance to environmental challenges.

Appendix 3. Trustees' Submission On Kew's Contribution To Defra's Objectives

Departmental strategic objectives	Kew's impact ¹
A society that is adapting to the effects of climate change	XXX
A healthy, resilient, productive and diverse natural environment	XXX
Sustainable, low carbon and resource efficient patterns of consumption and production	XXX
An economy and a society that are resilient to environmental risk	XXX
Championing sustainable development	XXX
A thriving farming and food sector with an improving net environmental impact	XX
A sustainable secure and healthy food supply	X
Strong rural communities	X
A respected department delivering efficient and high quality services and outcomes	XX

¹ The number of crosses represents the scale of Kew's impact on Defra's objectives.

Appendix 4. Trustees' Submission On Kew's Contribution To Public Service Agreements

Public Service Agreements 2008-2011	Kew's contribution ¹	Defra	DECC	BIS	DFID	DCMS	DCSF
PSA2 Improve the skills of the population, on the way to ensuring a world class skills base by 2020	X			X			
PSA4 Promote world class science and innovation in the UK	XX			X			
PSA10 Raise the educational achievement of all children and young people	X			X			X
PSA12 Improve the health and wellbeing of children and young people	X				X		
PSA14 Increase the number of children and young people on the path to success	X					X	X
PSA18 Promote better health and wellbeing for all	X						
PSA27 Lead the global effort to avoid dangerous climate change	XXX	X	X	X	X		
PSA28 Secure a healthy natural environment for today and the future	XXX	X					
PSA29 Reduce poverty in poorer countries through quicker progress towards the Millennium Development Goals	X	X			X		
PSA30 Reduce the impact of conflict through enhanced UK and international efforts	X				X		

¹ The number of crosses represents the scale of Kew's impact on PSAs.

Appendix 5. References

1. **Chase M.W. and Reveal, J.L.** (2009). A phylogenetic classification of the land plants to accompany APG III, *Botanical Journal of the Linnean Society*, **161**, (2) 122-127
2. **Christin, P.A., Besnard, G., Samaritani, E., Duvall, M.R., Hodkinson, T.R., Savolainen, V., Salamin, N.** (2008). Oligocene CO₂ decline promoted C₄ photosynthesis in grasses. *Curr Biol.* **18** (1) 37-43.
3. **Hollingsworth, P.M., Forrest, L.L., Spouge, J.L., Hajibabaei, M, Ratnasingham, S., van der Bank, M., Chase, M.W..... & Little, D.P** (2009). A DNA barcode for land plants. *PNAS* **106** (31) 12794-12797
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