



Australian Government
Director of National Parks



AUSTRALIAN NATIONAL
BOTANIC GARDENS

Australian National Botanic Gardens



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Australian National Botanic Gardens Management Plan 2012–2022



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ANBG vision

Australians value, conserve and appreciate our rich plant heritage.

Foreword

The Australian National Botanic Gardens (ANBG), on the lower slopes of Black Mountain in Canberra, contains the world's most comprehensive display of living Australian native plants. The diverse living collection provides an inspirational place for learning, quiet contemplation and passive recreation.

The ANBG is valued for its scientific and horticultural research into Australian plants and related flora. It is recognised for its role in the dissemination of knowledge and information about Australian plants and for its contribution to plant conservation. The ANBG provides learning experiences focusing on Australia's unique flora and landscapes, and influencing public attitudes to the conservation of plants and the environment. Growing partnerships and collaborations will assist the ANBG to champion the conservation of Australian native plants through its work in ex situ conservation.

The Australian National Herbarium—jointly managed by the ANBG and the Commonwealth Scientific and Industrial Research Organisation (CSIRO)—is the world's largest collection of Australian plant specimens and supports cutting edge research into the taxonomic and evolutionary origins of Australian plants.

The ANBG is a Commonwealth reserve under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is managed in accordance with the Act and associated Regulations. It is a requirement of the Act that management plans be prepared for Commonwealth reserves (s.366 of the EPBC Act). This management plan sets out the goals for the ANBG for the next ten years and how this national institution contributes to its botanical research and education on Australian plants, and how its iconic landscape will be managed for that period. The ANBG will demonstrate its continued commitment to increasing knowledge about the Australian flora through growing and showcasing a national collection representing Australia's plant diversity, undertaking world-class scientific and horticultural research, and informing the community through education programs that connect Australians to our unique natural heritage.

Peter Cochrane
Director of National Parks

Acknowledgements

The Director of National Parks is grateful to the many individuals and organisations who contributed to this management plan, in particular Parks Australia and Centre for Australian National Biodiversity Research staff; the Friends of the Australian National Botanic Gardens; botanic gardens across Australia and their friends and volunteer guides; community members who took part in discussion groups; and those who responded to the call to 'have your say' and public comments that contributed to the development of this management plan.

Summary

The Australian National Botanic Gardens has been growing, studying and promoting Australian plants and related flora for over 40 years. As a botanic garden and national institution managed by the Australian Government, the ANBG has a mandate to serve the nation; to conserve its living and herbarium collections as significant records of the story of plants in Australia's cultural and natural heritage; to encourage and support the cultivation, use and conservation of Australian plants and to be a custodian of the national story of Australia's unique flora.

The vision for the ANBG is that Australians value, conserve and appreciate our rich plant heritage.

To achieve this vision, the ANBG's mission is:

To inspire, inform and connect people to the Australian flora.

This management plan describes how the ANBG will be managed for the next ten years, both as a Commonwealth reserve under the EPBC Act and as an institution, playing a national role through the science and research activities associated with the knowledge and assets within the ANBG.

Part 1 of this plan is an introduction to the ANBG, providing a description of the reserve and the institution, and details of its vision, mission, goals and corporate values.

Part 2 is the management plan for the ANBG. It presents the legislative context and background information followed by details of how the ANBG will be managed. This is structured around five key result areas and nine goals. Each goal is followed by a direction setting statement which describes where the ANBG aspires to be in ten years. Challenges are described, and policies and actions to achieve the nine goals are set out. This plan aims to be strategic and for the most part specific details of daily operations are not outlined.

The national focus for the ANBG is reflected in the majority of its nine goals and the outcomes that it aims to achieve during the life of this plan:

Goal 1: Manage the national botanic garden to showcase Australia's plants.

Outcomes:

- The national living collection is maintained to high curatorial standards.
- The tree landscape is successfully managed for conservation, succession, maintenance of heritage values and public safety.
- Successful pioneering of propagation techniques for Australian native plants supports the ANBG, industry and conservation.

Goal 2: Champion the conservation of Australian plants and the role of ex situ conservation in integrated conservation management.

Outcomes:

- Successful development of a national network of native seed banks contributes to safeguarding Australian plant species from extinction.
- Successful collaborations highlight the ANBG's expertise and contribution to plant conservation.
- Accurate information is readily available to the Australian community to foster understanding and appreciation of conservation and the sustainable use of biodiversity.
- New living collection displays are developed that highlight the principles of sustainability through inspiring design and interpretation.

Goal 3: Create an inspirational place for enjoyment and learning.

Outcomes:

- Interpretation and experiences that connect people with plants and inspires learning and understanding of the value of Australia's unique flora.
- Events and activities hosted at the ANBG are enjoyed by a wide variety of people.
- Collaborations with tourism agencies and interests raise the ANBG's profile.
- New developments improve the accessibility of the ANBG site and encourage greater exploration of the living collection.

Goal 4: Engage communities in valuing and conserving Australia's natural and cultural heritage.

Outcome:

- Productive relationships with diverse communities increase understanding of and active involvement in the valuing and conservation of Australian plants.

Goal 5: Increase knowledge of Australian flora through outstanding research activities.

Outcomes:

- Through the Centre for Australian National Biodiversity Research, the ANBG makes significant contributions to understanding and knowledge about plant systematics, taxonomy, biogeography and the evolutionary origins of Australian plants and related floras.
- Horticultural science research generates practical outcomes that improve knowledge of the horticulture of Australian plants for industry and conservation.
- The Australian National Herbarium's taxonomic and geographic representative scientific collection of Australian and related floras is further developed to the highest curatorial standards.

Goal 6: Be the gateway for knowledge about Australian plants.

Outcomes:

- The ANBG is the central authoritative and accessible point for information about Australian plants.
- Research-based knowledge and supporting resources are widely used by a variety of clients through high quality electronic communications and information delivery networks.
- Strong partnerships with like-minded organisations bring together accurate and comprehensive information to foster understanding, appreciation and conservation of Australia's flora.

Goal 7: Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations.

Outcomes:

- The ANBG's ongoing participation in and contribution to effective national and international policies, protocols and standards relevant to the work of botanic gardens is recognised.
- The ANBG is a centre of expertise with regard to the flora of Australia and for national and international collaborative efforts including the Australian Network for Plant Conservation, Botanic Gardens Australia and New Zealand Inc., the Australian Cultivar Registration Authority and work under the Convention on Biological Diversity.

Goal 8: Grow as a national institution.

Outcomes:

- The expertise of staff and associates in science, horticulture and education is recognised and valued nationally and internationally.
- Best practice business operations and appropriate financial and staff resources support the management of the ANBG and the implementation of this plan.
- Partnerships with government and the private sector create a secure financial base for ANBG operations and programs that is appropriate to its national and international standing.
- Risk is managed to ensure the health and safety of visitors and staff and the protection of the ANBG's valuable assets.

Goal 9: Demonstrate environmental best practice and sustainable management.

Outcome:

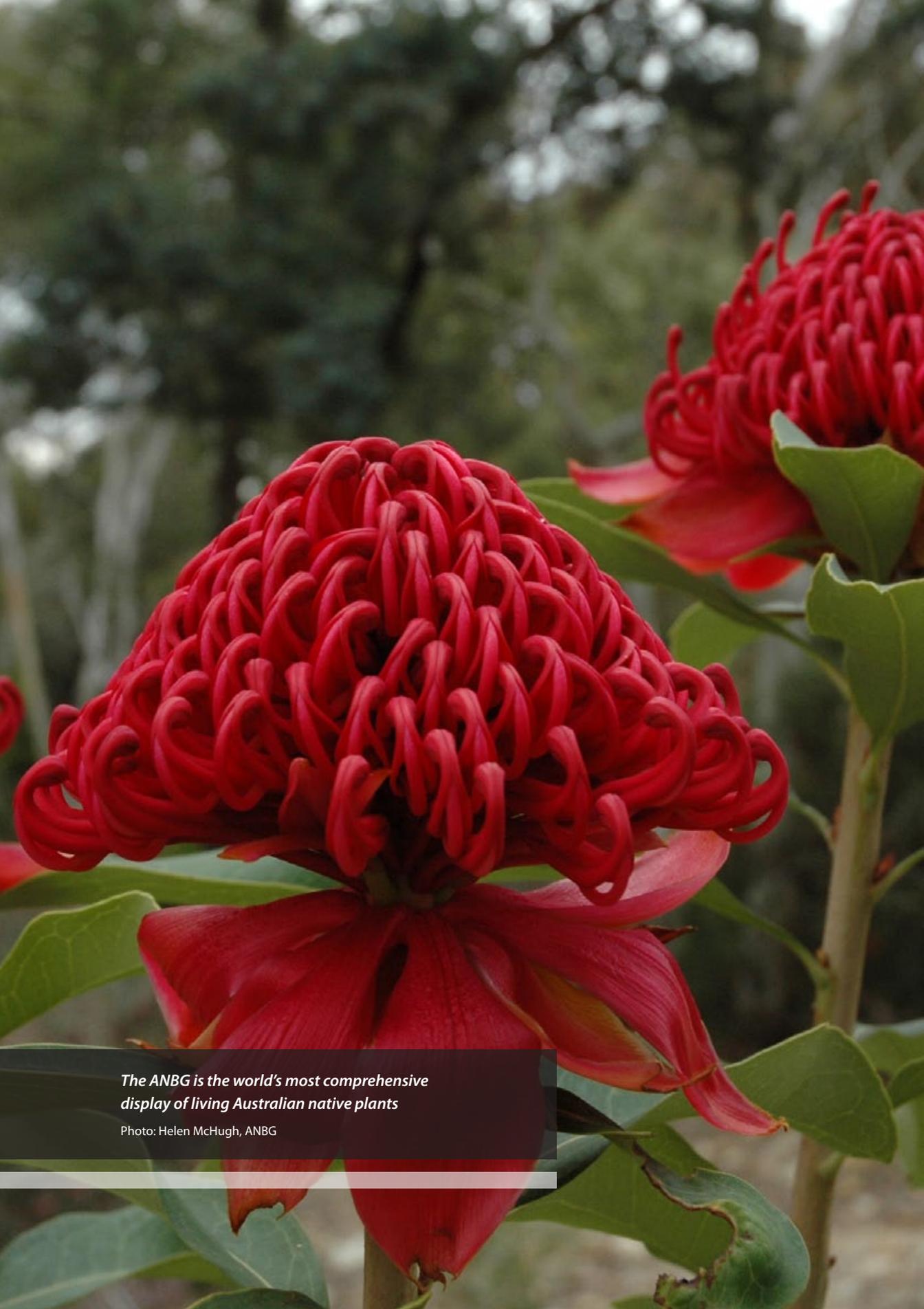
- An environmental management system is implemented that reduces the carbon footprint of the ANBG and successfully involves staff and the community in best achievable environmental practice.
- Maintain and execute a detailed schedule to guide the successful implementation of actions outlined in this plan.
- Continue to build staff capacity and employ succession planning strategies.
- Implement business practices that support the broadening of the revenue base.
- Continue to maintain partnerships and work collaboratively to draw together diverse expertise that complements the work of the ANBG.
- Share expertise to increase understanding of Australian plants and the role of the ANBG through enhanced documentation and use of diverse media.
- Regularly evaluate and monitor ANBG operations to maintain best practice in science, horticulture, conservation and education.

Contents

Foreword	i
Acknowledgements	ii
Summary	iii
Part 1	
Introduction to the Australian National Botanic Gardens	1
Functions of the ANBG	2
Description of the ANBG	3
Significance of the ANBG	7
ANBG values	8
Future direction statement	9
ANBG vision	9
ANBG mission	9
ANBG goals	10
Part 2	
Management plan for the Australian National Botanic Gardens	13
Background	14
Previous management plans	14
Structure of this management plan	14
Planning process	15
Introductory provisions	15
Short title	15
Commencement and termination	15
Interpretation (including acronyms)	16
Legislative context	20
Purpose and content of a management plan	24
International agreements	26
How the Australian National Botanic Gardens will be managed	28
Assigning the ANBG to an IUCN category	28

Natural heritage management	31
Goal 1: Manage the national botanic garden to showcase Australia’s plants	31
1.1 Development, management and curation of the living collection.....	31
Goal 2: Champion the conservation of Australian plants and the role of ex situ conservation in integrated conservation management	36
2.1 Conservation and horticulture.....	37
2.2 The ANBG landscape.....	39
2.3 Remnant vegetation and wildlife monitoring and management.....	40
Use and appreciation of the ANBG	45
Goal 3: Create an inspirational place for enjoyment and learning.....	45
3.1 Recreation and visitor management	45
3.2 Commercial operations.....	48
Goal 4: Engage communities in valuing and conserving Australia’s natural and cultural heritage	51
4.1 Public programs.....	52
4.2 Education (schools, community and outreach).....	54
4.3 Friends of the Australian National Botanic Gardens and volunteers.....	57
4.4 Marketing the ANBG	58
4.5 Interpretation.....	60
Biodiversity science, knowledge management and use.....	63
Goal 5: Increase knowledge of Australian flora through outstanding research activities	63
5.1 Centre for Australian National Biodiversity Research (CANBR).....	64
5.2 Plant systematics, biogeography and evolutionary research.....	65
5.3 Development, management and curation of the herbarium collection.....	67
5.4 Horticultural science	70
5.5 Access to biological resources and benefit-sharing.....	72
5.6 Conservation biology	74
Goal 6: Be the gateway for knowledge about Australian plants.....	76
6.1 Biodiversity informatics	77
6.2 The ANBG on the internet	79
6.3 The ANBG library and archives.....	81
6.4 The ANBG image collection.....	83
6.5 Plant identification and information services.....	86
Stakeholders and partnerships	89
Goal 7: Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations.....	89
7.1 National and international roles.....	89

Business management	93
Goal 8: Grow as a national institution	93
8.1 Staffing	94
8.2 Revenue and financial management	96
8.3 Health and safety	98
8.4 Security and law enforcement	100
8.5 Adjacent lands	102
8.6 Leases, licences and associated occupancy issues	103
Goal 9: Demonstrate environmental best practice and sustainable management	104
9.1 Capital works and infrastructure	104
9.2 Environmental management system	107
9.3 Assessment of proposals	109
9.4 New activities not otherwise specified in this plan	113
9.5 Plan implementation, monitoring and evaluation	114
References.....	117
Appendices	
A Key planning documents for the Australian National Botanic Gardens.....	119
B Commonwealth Heritage values of the Australian National Botanic Gardens	121
C Management principle schedules in the EPBC Regulations relevant to the Australian National Botanic Gardens	125
Maps	
1 Australian National Botanic Gardens site map	4
2 The Centre for Australian National Biodiversity Research in relation to the Australian National Botanic Gardens	5
3 Location of the Australian National Botanic Gardens in relation to Canberra City	6
Tables	
1 Decision-making process and impact assessment procedures	111
2 Environmental impact assessment matters and considerations	112
Index	129



The ANBG is the world's most comprehensive display of living Australian native plants

Photo: Helen McHugh, ANBG

Part 1
Introduction to the
Australian National Botanic Gardens



Functions of the ANBG

With a major development phase in the 1960s and its official opening in 1970, the Australian National Botanic Gardens (ANBG) became Australia's first botanic garden and research institution to specialise in native flora. With over 40 years experience in growing Australian plants, the ANBG has made important contributions to increasing the knowledge, appreciation and enjoyment of Australia's unique plant heritage and landscapes. Its scientifically based collections of living and herbarium specimens of Australian and related plants support a diversity of scientific and horticultural research.

The ANBG was declared as a reserve under the then *National Parks and Wildlife Conservation Act 1975* on 17 September 1991, for the purpose of increasing knowledge, appreciation and enjoyment of Australia's plant heritage by establishing, as an integrated resource, a collection of living and herbarium specimens of Australian and related plants for study, interpretation, conservation and display. The proclamation continued under the *Environment Protection and Biodiversity Conservation Act 1999*, which replaced the former Act on 16 July 2000.

Most of the scientific research at the ANBG is undertaken in partnership with other organisations. The Centre for Australian National Biodiversity Research (CANBR), formerly known as the Centre for Plant Biodiversity Research, is jointly managed by Commonwealth Scientific and Industrial Research Organisation (CSIRO) Plant Industry and the Director of National Parks through the ANBG. CANBR houses Australia's National Herbarium and aims to expand knowledge of Australia's plant diversity through scientific excellence in plant taxonomy and systematics, which involves identifying, naming and classifying different groups of plants.

Through CANBR, the ANBG has an important role in information technology, maintaining the national indexes of plant names and plant images, and making these publicly available via the internet. It is also a key player in such national initiatives as Australia's Virtual Herbarium and the Atlas of Living Australia. The internet provides an effective way of distributing scientific and horticultural expertise to a global audience. Staff expertise is also shared through publications, specialist conferences, business meetings and education programs. CANBR provides an important conduit to link the community with current science and encourage learning and discovery.

The ANBG has led the way in growing Australian native plants and initiating research to introduce many native plants into horticulture. A number of species in the living collection are endangered in their natural habitats and the ANBG is increasingly involved in their conservation through cultivation and propagation trials and the collection of seeds for preservation in the seed bank for study or reintroduction into their native habitats. Collaborations between the ANBG and government agencies, community groups and industry make an important contribution to vegetation restoration works and species recovery programs.

The ANBG is in a unique position to bring Australia's botanic gardens community together to work on national challenges such as climate and landscape change and helping to secure the nation's plant biodiversity through seed banking.

The ANBG takes an active role in inspiring appreciation and understanding of Australia's flora and ecosystems through its education and recreation programs. Among the programs for specialists are a Students Volunteer Botanical Internship Program, and staff supervise postgraduate students and deliver lectures at the ANBG, CANBR and partner universities. Schools education programs include teacher training days and a range of curriculum based programs for local and interstate schools.

The Director of National Parks is responsible for managing the ANBG, assisted by staff from the Australian Government department responsible for the EPBC Act. At the time of preparing this plan, this is the Department of Sustainability, Environment, Water, Population and Communities. The ANBG facilitates collaborations that contribute to national priorities in biodiversity conservation through its regional and national networks.

Description of the ANBG

The ANBG occupies an 85 hectare site on the lower eastern slopes of Black Mountain in Canberra and is a valuable part of the city's landscape. It is an integral part of a group of national research institutions including the Australian National University (ANU) and CSIRO.

The ANBG site has several distinctive features including its comparative steepness and elevation and its vistas towards Canberra. The site's topography is characterised by a series of five broad ridges that fan out to the east and south-east and are separated by four incised gullies. The site's eastern and northern sections are protected from prevailing westerly winds.

In the upper half of the northern extension and in the southern extension (Map 1) the steep gradients, ranging from 25 to 60 per cent, constrain pedestrian and vehicular movement, site access and the building of infrastructure and have implications for the use and development of these areas. The remnant open forest in these areas, dominated by *Eucalyptus rossii* and *E. macrorhyncha*, is retained and managed for conservation, wildlife habitat and education.

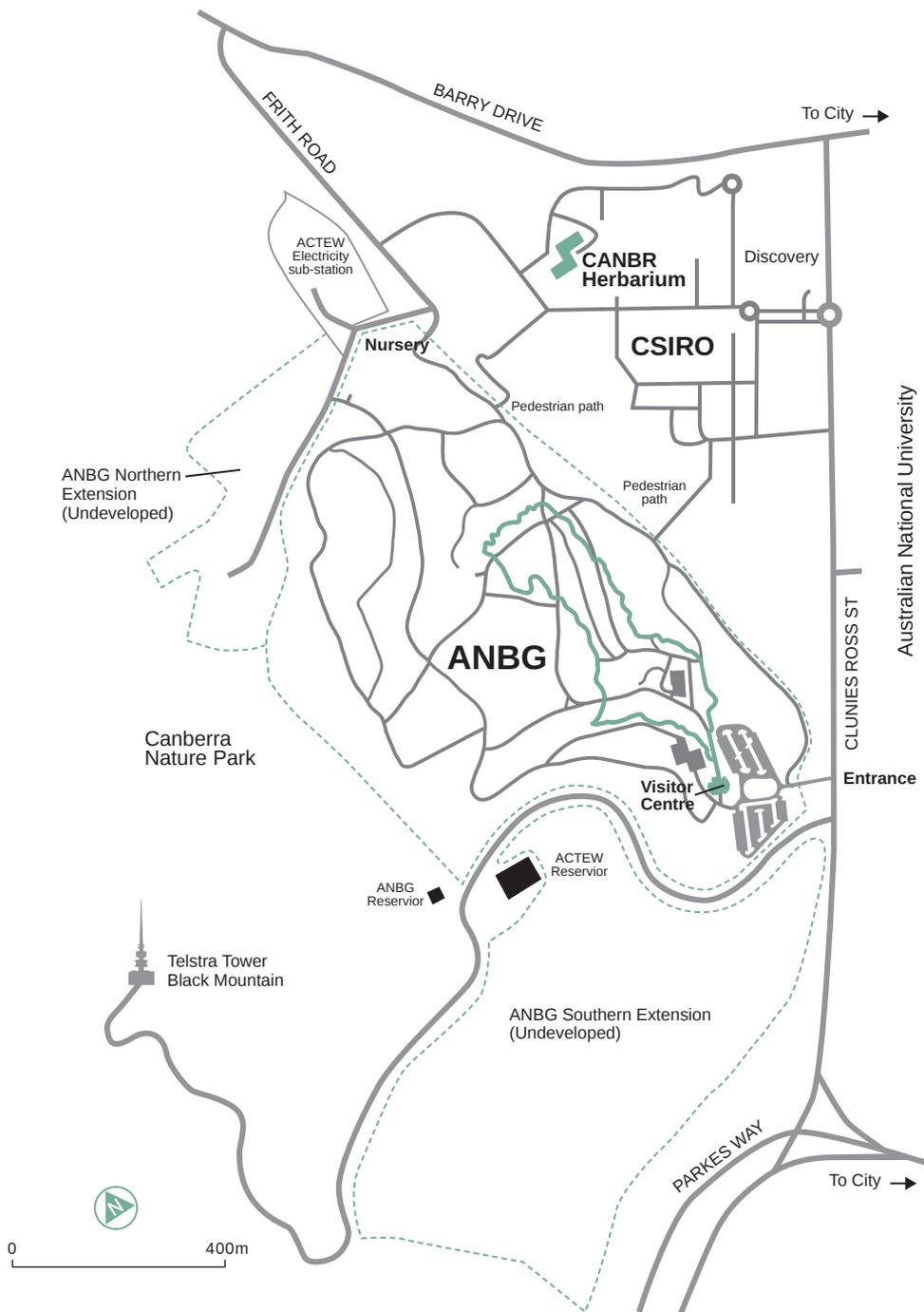
The living collection is displayed in 35 hectares of the 85 hectare site. The topography of the site's central part provides a range of opportunities, and favourable microclimates, for displaying and managing the diverse living collection that has been developed to showcase Australia's flora and to educate and raise awareness about its biological diversity. The collection is a representation of Australia's flora and focuses on several broad themes including taxonomy, ecology and geography, horticulture, conservation and ethnobotany. The collection displays about one-third of all Australian flowering plant species and is used to interpret iconic plants, such as eucalypts and wattles, and different Australian landscapes.

The ANBG is a haven for native fauna, especially birds. The site is also a haven for the local community and tourists seeking a place for passive recreation, peaceful reflection or to socialise, as well as a place to learn about Australian plants. It serves as a cultural recreation, entertainment and exhibition venue. An annual program of events attracts a diverse audience and provides opportunities to inspire interest in Australia's unique flora and fauna in an accessible nature-based setting.

Map 1: Australian National Botanic Gardens site map



Map 2: The Centre for Australian National Biodiversity Research (CANBR) in relation to the Australian National Botanic Gardens



Map 3: Location of the Australian National Botanic Gardens in relation to Canberra City



Significance of the ANBG

The ANBG is Australia's only national institution to focus solely on Australian plants and related flora, and its collections knowledge base and research are of both national and international significance.

The living collection of Australian native plants is one of the most comprehensive in the world. Furthermore, the institution makes an important contribution to taxonomy through the Centre for Australian National Biodiversity Research, where research programs and collections provide a national focus for botanical data. The ANBG is seen as a centre for horticultural trials and learning in relation to Australia's flora, and makes a valuable contribution to native plant horticulture and display. Staff also provide horticultural expertise in collaborative conservation projects. The ANBG facilitates collaborations with Australia's leading botanic gardens to enhance their work on Australia's national biodiversity conservation agenda.

The ANBG forms an integral component of architect Walter Burley Griffin's vision for Canberra and contributes to the aesthetic quality of the national capital. The ANBG is listed on the Commonwealth Heritage List as being nationally significant for its unique landscape, environmental character and outstanding examples of landscape design and horticulture using Australian native plants.

There is a key role for the ANBG in reflecting the essence of Australian culture through interpreting its living collection. Since its official opening in 1970 by then Prime Minister John Gorton, the ANBG has challenged prevailing botanic garden design by presenting a bush-like landscape showcasing Australia's unique plant diversity. The ANBG's establishment has led to a diversification of botanic garden design and focus in Australia from the early colonial gardens displaying introduced plants, to a range of less formally designed botanic gardens specialising in the display of native flora. It has been the inspiration for many of the nation's regional botanic gardens focusing on their local flora.

The ANBG is a Commonwealth reserve under the EBPC Act and is managed to achieve the purposes for which it was declared (see page 125).

The ANBG remains an important reminder of Australians' increasing appreciation of their natural heritage and is considered to be of outstanding value to many Australians. This is reflected by the number of visitors to the ANBG and to its website. Strong support is provided by the Friends of the Australian National Botanic Gardens, a community support group which boasts a large active membership.

The ANBG is significant for the following values:

Scientific values

- The ANBG conducts research into the taxonomy, horticulture and biology of native plant species based on the extensive herbarium collection linked to the living collection.
- The living collection, with its national focus, provides a valuable resource for research into conservation on the impacts of climate change and adaptation of native plants.
- The ANBG plays a valuable role in holding and disseminating knowledge on native plants.

Natural and cultural heritage values

- The ANBG was the first public garden composed of Australian native plants including a large number of rare and threatened plant species. It ensures the preservation of rare genotypes and provides some protection through cultivation.
- The ANBG is recognised on the Commonwealth Heritage List.
- The Australian National Herbarium includes a collection of preserved plant specimens closely associated with the living collection and has voucher specimens dating back to Joseph Banks' explorations during Captain Cook's voyage to Australia in 1770. The herbarium houses over 8,000 type specimens i.e. preserved specimens nominated by botanists to describe a new plant as the benchmark or standard for the name given to a plant when it is first described.
- The ANBG library is a valued resource and covers taxonomy, botany and the horticulture of Australian native plants with a significant collection of international publications on cryptogams and orchids.

Conservation values

- The ANBG holds a significant living collection, seed bank and gene bank essential for managing the risk of species loss in the wild.
- The ANBG provides an urban biodiversity haven with over 100 native bird species having been recorded on the site.

Education values

- The ANBG provides a valued education role for students from primary to tertiary level from across the nation, including horticultural and taxonomic training. The living collection is particularly important for this function.
- The ANBG demonstrates design excellence in construction of certain garden features, in particular the Rain Forest Gully representing a geographic transect of Australia's east coast, and the rockery area with its carefully composed combination of rocks, pools and running water.

Social values

- The community supports, appreciates and values the ANBG's unique flora and landscape.
- The ANBG provides a venue for relaxation and reflection in a natural setting and provides public access to a large variety of native species, providing flowering displays throughout the year.
- The ANBG is an important tourist attraction and offers a wide range of visitor experiences.

Aesthetic values

- The ANBG is an important component of Canberra's Central National Area landscape setting and provides vistas of major Canberra features including Parliament House.
- The ANBG has aesthetic characteristics and amenity valued by the community with an attractive park landscape, contrasting native vegetation, waterforms and rockforms.

Future direction statement

The ANBG's future direction is guided by its vision, mission, goals and corporate values.

ANBG vision

Australians value, conserve and appreciate our rich plant heritage.

ANBG mission

To inspire, inform and connect people to the Australian flora.

To achieve its vision and mission, the ANBG will continue to place priority on scientific and horticultural research that contributes to the description, classification and understanding of Australian plants and builds horticultural knowledge to support the conservation and sustainable use of Australian plants. The ANBG's work will be influenced by the examination and understanding of current threats to Australia's biological diversity, such as climate and landscape change. The ANBG will facilitate national and international policy and practice that continues to support the work of Australia's botanic gardens in biodiversity conservation.

The living collection will be managed to be the nation's pre-eminent scientific collection of well-documented Australian plants and will be housed in a garden based on state of the art horticulture practices for all visitors to enjoy. ANBG staff will continue to work with community and industry partners to advance horticultural practices for the cultivation of Australian plants.

The ANBG will be the accessible gateway to Australian plant information and knowledge and will continue to maintain strong partnerships to ensure its importance to Australian society through supporting world class research and education. Its programs combining traditional knowledge, art and science, and collaborations with botanic gardens and national and state institutions, will enrich Australian society, build botanical knowledge and inspire conservation of Australia's unique plants.

ANBG goals

The management prescriptions in this plan are structured around nine goals. The goals support the purpose for which the ANBG was declared, give direction to the management of the ANBG consistent with the ANBG's International Union for Conservation of Nature (IUCN) category and applicable Australian IUCN reserve management principles, and complement the ANBG's vision and mission. The goals are:

- 1. Manage the national botanic garden to showcase Australia's plants.**
- 2. Champion the conservation of Australian plants and the role of ex situ conservation in integrated conservation management.**
- 3. Create an inspirational place for enjoyment and learning.**
- 4. Engage communities in valuing and conserving Australia's natural and cultural heritage.**
- 5. Increase knowledge of Australian flora through outstanding research activities.**
- 6. Be the gateway for knowledge about Australian plants.**
- 7. Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations.**
- 8. Grow as a national institution.**
- 9. Demonstrate environmental best practice and sustainable management.**



Funded by the Friends of the ANBG, this armillary sphere sundial is located beside the main path near the Rock Garden

Photo: H M Rawson

Part 2
Management plan for the
Australian National Botanic Gardens



Background

Part 2 sets out the context in which the ANBG management plan was prepared. It describes previous plans and the network of legislative requirements and international agreements which underpin the strategic direction of this plan.

Previous management plans

This is the third ANBG management plan. The first management plan was in operation from 1993 to 2001. The second management plan came into operation on 9 January 2002 and ceased to have effect on 8 January 2009. Previous planning tools that apply to the work of the ANBG are summarised in Appendix A.

Section 357 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) allows the Director to manage a Commonwealth reserve following the expiration of a management plan in accordance with the IUCN management principles for the IUCN category to which the reserve was assigned under an expired management plan.

Structure of this management plan

The plan reflects the multidisciplinary nature of the ANBG. The strategic priorities for the next ten years are presented under nine broad goals and will guide the management of the Commonwealth reserve and the associated living and herbarium collections, as well as providing broad direction for the institution's scientific and educational roles.

The structure of this plan reflects the Parks Australia Strategic Planning and Performance Assessment Framework, a set of priorities based on Australian Government policy and requirements for the management of Commonwealth reserves under the EPBC Act.

Success in delivery of this management plan will be measured against performance measures specified in Portfolio Budget Statements and the Parks Australia Divisional Plan. Across Parks Australia, long-term outcomes and shorter-term outputs are specified against the following seven key result areas (KRAs):

- Natural heritage management
- Cultural heritage management
- Joint management and working with Indigenous communities
- Use and appreciation of protected areas
- Stakeholders and partnerships
- Business management
- Biodiversity science, knowledge management and use.

Five of the key result areas are directly relevant to the ANBG. As the ANBG's cultural values are primarily found in the plants and herbarium specimens which tell the story of efforts to identify,

describe and record Australian plant species since European settlement of Australia, the sections of this plan that deal with the living and herbarium collections include the management of these cultural resources and records. Working with indigenous communities is included in Stakeholders and Partnerships.

The nine goals described in this plan and the management prescriptions under each goal can be assessed and reported against KRAs.

Planning process

Section 366 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires that the Director of National Parks prepare management plans for each Commonwealth reserve. Section 368 of the EPBC Act requires the Director to seek comments from members of the public and the relevant state or territory government. In the case of this plan, this included a call for community members to prepare written submissions on a range of issues including climate change, management, curation of the living collection, visitor experiences, environmentally sustainable management and the role of science. Other stakeholder groups and individuals consulted in the preparation of this management plan included:

- community members associated with botanic gardens in Adelaide, Brisbane, Hobart, Melbourne, Perth and Sydney, and the regional areas of Cranbourne in Victoria and Port Augusta in South Australia
- representatives from various capital city and regional botanic gardens, national institutions, local community groups and organisations
- the Friends of the Australian National Botanic Gardens
- CSIRO and Parks Australia staff.

Introductory provisions

Short title

This management plan may be cited as the *Australian National Botanic Gardens management plan*.

Commencement and termination

This management plan will come into operation, following approval by the Minister under s.370 of the EPBC Act, on a date specified by the Minister or at the beginning of the day after it is registered under the *Legislative Instruments Act 2003*, whichever is later. The plan will cease to have effect ten years after commencement, unless revoked or amended earlier by another management plan.

Interpretation (including acronyms)

In this management plan:

Access to biological resources means taking biological resources of native species for research and development of any genetic resources, or biochemical compounds, comprising or contained in the biological resources.

Australian Cultivar Registration Authority Incorporated or **ACRA** means the association of that name incorporated under the *Associations Incorporation Act 1991* (ACT) and the International Registration Authority of that name for the registration of Australian plant genera excluding those covered by other authorities. ACRA registers all endemic genera and all predominantly Australian genera. ACRA also registers all Australian varieties accepted by the Australian Plant Breeders Rights Office.

Australian National Botanic Gardens or **ANBG** means the area declared as a reserve by that name under the NPWC Act and continued under the EPBC Act by the *Environmental Reform (Consequential Provisions) Act 1999*. It also means the scientific and educational institution associated with the reserve and its living and herbarium collections.

Australian National Herbarium or **ANH** means the herbarium of that name operated jointly by the ANBG and CSIRO through the Centre for Australian National Biodiversity Research.

Australian Network for Plant Conservation or **ANPC** means the organisation of that name whose mission is to promote and develop plant conservation in Australia.

Australian Plant Image Index or **APII** means the national collection of images and illustrations of Australian flora managed by the ANBG.

Biological diversity or **biodiversity** means the variability among living organisms from all sources including, among other things, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. It includes diversity within species and between species, and diversity of ecosystems.

Biological material means, but is not limited to, plants, plant parts or propagation material (such as seeds, cuttings, roots, bulbs, corms or leaves), biological resources, fungi or other fungal material, and any other material of plant, animal, fungal, microbial or other origin and the genetic resources contained therein.

Biological resources means genetic resources, organisms, parts of organisms, populations and any other biotic component of an ecosystem with actual or potential use or value for humanity.

Born-digital image means an image that originated in a digital form, in contrast to an image that originates as a negative, transparency or other physical medium that is later scanned to become a digital image. Born-digital images are usually captured using digital cameras or similar equipment.

Botanic Gardens Australia and New Zealand Incorporated or **BGANZ** means the chief body representing the interests of botanic gardens in Australia and New Zealand. It promotes the interests and activities of these botanic gardens and botanic gardens generally and enhances the state of botanic gardens for the benefit of the community.

Botanic Gardens Conservation International or **BGCI** means the international member organisation of that name that develops and implements global policy and supports its members and the wider community in plant conservation.

CANBR Agreement means the agreement between the Director of National Parks and CSIRO for the establishment and joint management of CANBR, as varied from time to time.

Centre for Australian National Biodiversity Research or **CANBR** means the research centre of that name (formerly known as the Centre for Plant Biodiversity Research) established and managed by the Director and CSIRO under the CANBR Agreement. The Australian National Herbarium is managed through CANBR.

Central National Area means the area of land within the Australian Capital Territory designated by that name under the provisions of s.10(1) of the *Australian Capital Territory (Planning and Land Management) Act 1988*.

Convention on International Trade in Endangered Species of Wild Fauna and Flora or **CITES** means an international agreement between governments to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

Convention on Biological Diversity or **CBD** means the international agreement of that name, ratified by Australia on 18 June 1993. The convention has three main objectives: the conservation of biological diversity, the sustainable use of the components of biological diversity, and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

Commonwealth reserve means a reserve established under Division 4 of Part 15 of the EPBC Act.

Council of Heads of Australia's Botanic Gardens or **CHABG** means the national council of that name, established by representatives from Australian capital city botanic gardens as a forum for information sharing, discussion and coordination of strategic initiatives for the gardens' mutual benefit and for the benefit of their communities.

Council of Heads of Australasian Herbaria Incorporated or **CHAH** means the association of that name incorporated under the *Associations Incorporation Act 1991* (ACT). The objective of CHAH is to promote the discovery, documentation and delivery of taxonomic, systematic and botanical knowledge and information relating to plant, algal and fungal biodiversity in its broadest sense.

Curation of the living collection means the management of the living collection including acquisition; horticultural, nursery and seed banking practices; deaccessioning; maintaining plant records, including ensuring information is current and updating, labelling and mapping; and preserving the collection for current and future research, conservation, education and exhibition/display needs.

Commonwealth Scientific and Industrial Research Organisation or **CSIRO** means the Australian Government agency of that name established by the *Science and Industry Research Act 1949*.

Department means the Australian Government department responsible for the EPBC Act. At the time of preparing this plan, this is the Department of Sustainability, Environment, Water, Population and Communities or such other department or agency that succeeds to the functions of the department.

Director means the Director of National Parks under s.514A of the EPBC Act, and includes Parks Australia and any person to whom the Director has delegated powers and functions under the EPBC Act in relation to the ANBG.

EPBC Act or the Act means the *Environment Protection and Biodiversity Conservation Act 1999*, including Regulations under the Act, and includes reference to any Act amending, repealing or replacing the EPBC Act.

EPBC Regulations or the Regulations means the Environment Protection and Biodiversity Conservation Regulations 2000 and includes reference to any Regulations amending, repealing or replacing the EPBC Regulations.

Ethnobotany is the scientific study of the relationships that exist between people and plants, including, but not limited to, folklore, religion, Indigenous use and agricultural customs.

Ex situ conservation means the conservation of components of biological diversity outside their natural habitats.

Friends of the Australian National Botanic Gardens or the Friends means the Friends of the Australian National Botanic Gardens Inc. incorporated under the *Associations Incorporation Act 1991* (ACT).

Gazette means the *Commonwealth of Australia Gazette*.

Genetic resources means any material of plant, animal, microbial or other origin that contains functional units of heredity and that has actual or potential value for humanity.

Herbarium collection means the national collection of Australia's plant biodiversity managed by the Australian National Herbarium.

Integrated Botanical Information System or IBIS means the relational database that links data held in the various collections of the ANBG, the Australian National Herbarium, the Australian Plant Image Index and the Australian Plant Name Index.

In situ conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

The institution means the ANBG and in most cases specifically its corporate, scientific and educational aspects and their associated records and collections.

Integrated conservation management means that all streams of conservation activity, both in situ and ex situ, contribute towards conservation objectives, are consistent with each other and with the relevant legislation and general policy, and resolve conflicts between potentially conflicting objectives and interests.

International Union for Conservation of Nature or **IUCN** means the global environmental network of that name, a democratic union which brings together member states (countries), non-government organisations, United Nations agencies, companies and local communities to discuss and promote solutions to international environment and development challenges.

Living collection means the living resources that form the basis of the work of the ANBG including the accessioned and non-accessioned open ground collections, glasshouse collections, seed bank and nursery collections.

Management plan or **plan** means this management plan for the ANBG, unless otherwise stated.

Management principles means the Australian IUCN reserve management principles set out in Schedule 8 of the EPBC Regulations (Appendix C).

Minister means the Minister administering the EPBC Act.

National Capital Authority means the organisation of that name established under the *Australian Capital Territory (Planning and Land Management) Act 1988* or such other department or agency that succeeds to the functions of the National Capital Authority.

NPWC Act means the *National Parks and Wildlife Conservation Act 1975* and the Regulations under that Act.

Parks Australia means the Director of National Parks and the agency that assists the Director in performing the Director's functions under the EPBC Act. At the time of preparing this plan, the agency assisting the Director is the Parks Australia Division of the Department of Sustainability, Environment, Water, Population and Communities.

Pest means any animal, plant or organism having, or with the potential to have, an adverse economic, environmental or social impact.

Schedule of Charges means the charges determined and imposed by the Director under s.356A of the EPBC Act in relation to the ANBG.

Staff means employees of the department assigned to duties to assist the Director of National Parks.

Sustainable use means the use of components of biodiversity and resources in a way and at a rate that does not lead to the long-term decline of biodiversity, thereby maintaining biodiversity's potential to meet the needs and aspirations of present and future generations.

Voucher or **voucher specimen** means a representative specimen of a plant or animal that serves as a basis of study and is retained as a reference.

Legislative context

EPBC Act

Objects of the Act

The objects of the EPBC Act as set out in Part 1 of the Act are:

- a. to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance; and
- b. to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and
- c. to promote the conservation of biodiversity; and
- ca. to provide for the protection and conservation of heritage; and
- d. to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and Indigenous peoples; and
- e. to assist in the co-operative implementation of Australia's international environmental responsibilities; and
- f. to recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and
- g. to promote the use of Indigenous people's knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

Establishment of the ANBG

The ANBG was declared a reserve on 17 September 1991 under the *National Parks and Wildlife Conservation Act 1975* (NPWC Act) which was replaced by the EPBC Act in July 2000. It continues as a Commonwealth reserve under the EPBC Act, pursuant to the *Environmental Reform (Consequential Provisions) Act 1999*, which deems the ANBG to have been declared for the purpose of the increase of knowledge, appreciation and enjoyment of Australia's plant heritage by establishing, as an integrated resource, a collection of living and herbarium specimens of Australian and related plants for study, interpretation, conservation and display.

Director of National Parks

The Director of National Parks is a corporation under s.514A of the EPBC Act and a Commonwealth authority for the purposes of the *Commonwealth Authorities and Companies Act 1997*. The corporation is controlled by the person appointed by the Governor-General to the office that is also called the Director of National Parks (s.514F).

The functions of the Director (s.514B) include the administration, management and control of the ANBG. The Director generally has power to do all things necessary or convenient for performing the Director's functions (s.514C). The Director has a number of specified powers under the EPBC Act and EPBC Regulations, including powers to prohibit or control some activities, and to issue permits for activities that are otherwise prohibited. The Director performs functions and exercises powers in accordance with this plan.

Management plans

The EPBC Act (ss.366 and 368) requires the Director of National Parks to prepare management plans for Commonwealth reserves and sets out the content of a plan and matters to be taken into account when preparing a management plan. When prepared, a plan is given to the Minister for approval. A management plan is a 'legislative instrument' for the purposes of the *Legislative Instruments Act 2003* and must be registered under the Act. Following registration the plan is tabled in each House of the Commonwealth Parliament and may be disallowed by either House on a motion moved within 15 sitting days of the House after tabling.

A management plan for a Commonwealth reserve has effect for ten years, subject to its being revoked or amended earlier by another management plan for the reserve.

See page 24 in relation to EPBC Act requirements for a management plan.

Control of actions in Commonwealth reserves

The EPBC Act (ss.354 and 354A) prohibits certain acts from being done in a Commonwealth reserve except in accordance with a management plan. The actions are:

- kill, injure, take, keep or move a member of a native species; or
- damage heritage; or
- carry on an excavation; or
- erect a building or other structure; or
- carry out works; or
- take an action for commercial purposes.

Mining operations are prohibited in the ANBG by the EPBC Act (ss.355 and 355A) except when authorised under a management plan.

The EPBC Regulations control, or allow the Director to control, a range of activities in Commonwealth reserves, such as camping, use of vehicles, littering, commercial activities and research. The Director applies the Regulations subject to, and in accordance with, the EPBC Act and management plans. The Regulations do not apply to the Director or to wardens or rangers appointed under the EPBC Act. Activities that are prohibited or restricted by the EPBC Regulations may be carried out if they are authorised by a permit issued by the Director and/or they are carried out in accordance with a management plan or if another exception prescribed by r.12.06(1) of the Regulations applies.

Access to biological resources in Commonwealth areas is regulated under Part 8A of the EPBC Regulations. Access to biological resources is also covered by ss.354 and 354A of the EPBC Act if the resources are members of a native species and/or if access is for commercial purposes.

Fees and charges

Under s.356A of the EPBC Act the Director may, with the Minister's approval, determine and impose charges for entering or using the ANBG or part of the ANBG, using services or facilities provided by the Director in or in connection with the ANBG, and parking or stopping vehicles in the ANBG. At the time of preparing this plan charges are in place for:

- parking
- plant identification services
- photographic services
- education services
- public programs such as school holiday and early childhood programs, and staff-guided services
- use of buildings and sites
- ANBG staff services for event and venue management.

These charges may be reviewed during the life of the plan and new charges set (see also Section 8.2, Revenue and financial management).

Fees may also be prescribed by Schedule 12 of the EPBC Regulations in relation to issuing permits. At the commencement of this plan there are no fees in place under the EPBC Regulations for issuing permits at the ANBG.

Environmental impact assessment

Actions that are likely to have a significant impact on 'matters of national environmental significance' are subject to the referral, assessment and approval provisions of Chapters 2 to 4 of the EPBC Act (irrespective of where the action is taken).

At the time of preparing this plan, the matters of national environmental significance identified in the EPBC Act relevant to the ANBG are:

- nationally listed threatened species and ecological communities
- listed migratory species.

The referral, assessment and approval provisions also apply to actions on Commonwealth land that are likely to have a significant impact on the environment and to actions taken outside Commonwealth land that are likely to have a significant impact on the environment on Commonwealth land. The ANBG is Commonwealth land for the purposes of the EPBC Act.

Responsibility for compliance with the assessment and approvals provisions of the EPBC Act lies with persons taking relevant 'controlled' actions. A person proposing to take an action that the person thinks may be, or is, a controlled action should refer the proposal to the Minister for the Minister's decision whether or not the action is a controlled action. The Director of National Parks may also refer proposed actions to the Minister.

Flora and fauna protection

The EPBC Act contains provisions (Part 13) that prohibit or regulate actions in relation to listed threatened species and ecological communities, listed migratory species, cetaceans (whales and dolphins) and listed marine species. The EPBC Act also contains provisions (Part 13A) which prohibit or regulate the movement of wildlife specimens, ensuring that Australia complies with its obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The EPBC Act defines wildlife as living plants and animals, and specimens derived from plants and animals.

The living and herbarium collections include examples of listed threatened species in ex situ conservation and preserved as herbarium specimens.

As part of the ANBG's work, voucher specimens are often sent to other herbaria, nationally and internationally. Article VII (paragraph 6) of CITES provides an exemption from the provisions relating to regulation of trade in specimens of species included in Appendices I to III for non-commercial loan, donation or exchange between scientists or scientific institutions registered by a management authority of their state. The EPBC Act also allows for the Minister to determine exemptions to ss.303CC, 303CD and 303DD of the Act, where the movement of the specimen is taken to be part of a registered non-commercial exchange of scientific specimens between scientific organisations.

Heritage protection

At the time of preparing this plan, the ANBG is a listed place on the Commonwealth Heritage List under the EPBC Act for the following significant heritage values:

- The ANBG has rare and endangered native plant species in cultivation within its living collection. Public gardens of this type are rare and it is the first public garden composed essentially of Australian native plants, with some related species (criterion b).
- It is a research and teaching site with an extensive herbarium collection linked to the living plant collection; this is rare on such a scale in Australia (criterion c).
- The site's aesthetic characteristics are valued by the community. They comprise an attractive park landscape with a well balanced integration of spaces and form; interest from the vegetation details of the variety of native species; contrasts of small and large plants, water form, rock form and colour; vistas of major Canberra features including Parliament House; and many attractive views across Lake Burley Griffin (criterion e).
- The ANBG demonstrates a high degree of technical achievement with its living collection linked to the herbarium collection. The ANBG also demonstrates design excellence in construction of certain garden features, in particular the rain forest gully which represents a geographic transect up the east coast of Australia and the rockery area with its carefully contrived combination of rocks, pools and running water. The ANBG is innovative in being the first public garden composed essentially of Australian native plants with some related species (criterion f).

The ANBG's Commonwealth Heritage values are summarised in Appendix B.

In terms of Commonwealth Heritage listed places, the EPBC Act heritage protection provisions (ss.341A to 341ZH) relevantly provide:

- for the establishment and maintenance of a Commonwealth Heritage List, criteria and values for inclusion of places in the list and management principles for places that are included in the list
- that Commonwealth agencies must not take an action that is likely to have an adverse impact on the heritage values of a place included in the Commonwealth Heritage List unless there is no feasible and prudent alternative to taking the action, and all measures that can reasonably be taken to mitigate the impact of the action on those values are taken
- that Commonwealth agencies that own or control places must:
 - i. make a written plan to protect and manage the Commonwealth Heritage values of each of its Commonwealth Heritage places
 - ii. prepare a written heritage strategy for managing those places to protect and conserve their Commonwealth Heritage values. The strategy must address any matters required by the EPBC Regulations, and not be inconsistent with the Commonwealth Heritage management principles
 - iii. identify Commonwealth Heritage values for each place, and produce a register that sets out the Commonwealth Heritage values (if any) for each place (and do so within the time frame set out in their heritage statements).

The prescriptions within this management plan are consistent with Commonwealth Heritage management principles and other relevant obligations under the EPBC Act for protecting and conserving the heritage values for which the ANBG was declared.

The ANBG is designated national land under the *Australian Capital Territory (Planning and Land Management) Act 1988* and developments require approval from the National Capital Authority.

Penalties

Civil and criminal penalties may be imposed for breaches of the EPBC Act.

Purpose and content of a management plan

The purpose of this management plan is to describe the philosophy and direction of management for the ANBG for the next ten years in accordance with the EPBC Act. The plan enables management to proceed in an orderly way, helps to reconcile competing interests, and identifies priorities for the allocation of available resources.

Under s.367(1) of the EPBC Act, a management plan for a Commonwealth reserve (in this case, the ANBG) must provide for the protection and conservation of the reserve. In particular, the plan must:

- a. assign the reserve to an IUCN protected area category (whether or not a Proclamation has assigned the reserve or a zone of the reserve to that IUCN category); and
- b. state how the reserve, or each zone of the reserve, is to be managed; and

- c. state how the natural features of the reserve, or of each zone of the reserve, are to be protected and conserved; and
- d. if the Director holds land or seabed included in the reserve under lease—be consistent with the Director’s obligations under the lease; and
- e. specify any limitation or prohibition on the exercise of a power, or performance of a function, under the EPBC Act in or in relation to the reserve; and
- f. specify any mining operation, major excavation or other works that may be carried on in the reserve, and the conditions under which it may be carried on; and
- g. specify an operation or activity that may be carried on in the reserve; and
- h. indicate generally the activities that are to be prohibited or regulated in the reserve, and the means of prohibiting or regulating them; and
- i. indicate how the plan takes account of Australia’s obligations under each agreement with one or more other countries that is relevant to the reserve (including the World Heritage Convention and the Ramsar Convention, if appropriate); and
- j. if the reserve includes a National Heritage Place:
 - i. not be inconsistent with the National Heritage management principles; and
 - ii. address the matters prescribed by regulations made for the purposes of paragraph 324S(4)(a); and
- k. if the reserve includes a Commonwealth Heritage place:
 - i. not be inconsistent with the Commonwealth Heritage management principles; and
 - ii. address the matters prescribed by regulations made for the purposes of paragraph 341S(4)(a).

In preparing a management plan, the EPBC Act (s.368(3)) also requires account to be taken of various matters. In respect to the ANBG, these matters include:

- the regulation of the use of the reserve for the purposes for which it was declared
- the protection of the special features of the reserve, including objects and sites of biological, historical, palaeontological, archaeological, geological and geographical interest
- the protection, conservation and management of biodiversity and heritage within the reserve
- the protection of the reserve against damage
- Australia’s obligations under agreements between Australia and one or more other countries relevant to the protection and conservation of biodiversity and heritage.

IUCN category and zoning

As noted above, a Commonwealth reserve management plan must assign the reserve to an IUCN protected area category. In addition, a management plan may divide a Commonwealth reserve into zones and assign each zone to an IUCN category. The category to which a zone is assigned may differ from the category to which the reserve is assigned (s.367(2)).

The provisions of a management plan must not be inconsistent with the management principles for the IUCN category to which the reserve or a zone of the reserve is assigned (s.367(3)). See page 28 for information on the ANBG's IUCN category.

International agreements

This management plan takes account of Australia's obligations under relevant international agreements and the specific role that the ANBG can play in supporting national obligations under such conventions.

Convention on Biological Diversity (CBD)

Australia ratified the Convention on Biological Diversity on 18 June 1993 and the convention came into force in December 1993. The convention's objectives are:

- the conservation of biological diversity
- the sustainable use of its components
- the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

The ANBG plays an important role in achieving these objectives through the implementation of the International Agenda for Botanic Gardens in Conservation (Wyse Jackson and Sutherland 2000) and the Global Strategy for Plant Conservation (Secretariat of the CBD undated). More specifically, its collections and the application of skills in such areas as taxonomy, botanical research, conservation, education and awareness raising, propagation and cultivation contribute significantly to the implementation of the convention in Australia. Articles of the convention relevant to the ANBG include Articles 6 to 10, 12, 13, 15, 17 and 18.

Nagoya Protocol

In November 2010 Australia, as a member of the Conference of Parties to the Convention on Biological Diversity, adopted the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.

The protocol establishes a legally binding framework for access to genetic resources for research activities and for sharing the benefits from their use or the use of associated traditional knowledge. Access to biological resources in Commonwealth areas such as the ANBG is regulated under the EPBC Act and EPBC Regulations (see also Section 5.5, Access to biological resources and benefit-sharing).

United Nations Framework Convention on Climate Change

The ANBG contributes to the United Nations Framework Convention on Climate Change through the implementation of the National Strategy and Action Plan for the Role of Australia's Botanic Gardens in adapting to Climate Change (CHABG 2008). The ANBG plays an important role in coordinating a national safety net for Australia's plant species through ex situ conservation, delivering integrated and easily accessible information about Australian plant species, and increasing national community awareness of climate change and facilitating an effective response.

Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention)

The ANBG contributes to the World Heritage Convention by supporting the network of listed sites through research, plant collections, horticultural and educational programs.

Convention on Wetlands of International Importance (Ramsar Convention)

The Ramsar Convention is relevant to the ANBG in relation to cultivation and conservation of rare and endangered aquatic plants. To date this is an undeveloped area. However, the ANBG's expanding work in alpine-related research may lead to greater contributions to work relevant to this convention.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The ANBG and the Australian National Herbarium are scientific registered institutions under CITES. This helps facilitate scientific exchange of specimens needed to conduct taxonomic and species-conservation research. CITES Article VII (paragraph 6) provides an exemption from the provisions relating to regulation of trade in specimens of species included in Appendices I to III for non-commercial loan, donation or exchange between scientists or scientific institutions registered by a management authority of their state. This exemption covers herbarium specimens; other preserved, dried or embedded museum specimens; and live plant material which carries a label issued or approved by the management authority. The exemption applies to legally acquired plant specimens that are under the authority of the registered scientific institutions.

How the Australian National Botanic Gardens will be managed

The following section outlines the process for assigning the ANBG to an IUCN category. Subsequent sections outline nine goals for the ANBG (grouped under five key result areas), describe a broad management direction to be taken in the next ten years and present prescriptions (policies and actions) to help achieve these goals.

Assigning the ANBG to an IUCN category

Performance indicator

The following indicator will be used under this plan to measure performance:

- Degree of management compliance with the relevant Australian IUCN reserve management principles.

The provisions of a management plan must not be inconsistent with the Australian IUCN reserve management principles for the IUCN category to which the reserve or a zone of the reserve is assigned (s.367(3) of the EPBC Act). The EPBC Act requires this management plan to assign the ANBG to an IUCN category consistent with the purposes for which it was declared. The ANBG was declared for the purposes of conservation, display and protection of flora, scientific research and education, consistent with the characteristics for IUCN protected area category IV, habitat/species management area.

The EPBC Act (s.348) requires the EPBC Regulations to prescribe principles for each IUCN category (Australian IUCN reserve management principles) as well as seven general administrative principles. Appendix C of this plan sets out the general administrative principles and the specific management principles for IUCN protected area category IV, as prescribed in Schedule 8 to the EPBC Regulations, and notes the sections of the management plan that address each principle. These principles identify the purposes for which the Commonwealth reserve, or zone, assigned to the category are primarily to be managed. Of particular relevance to the ANBG is the final principle for category IV, which provides that 'if a reserve or zone is declared for the purpose of a botanic garden, it should also be managed for the increase of knowledge, appreciation and enjoyment of Australia's plant heritage by establishing, as an integrated resource, a collection of living and herbarium specimens of Australian and related plants for study, interpretation, conservation and display'.

Aim

- The ANBG is managed in accordance with an IUCN category that provides for appropriate use of the reserve while protecting its natural and cultural features.

Issue

- An appropriate management category needs to be assigned to ensure appropriate protection, conservation and use of the reserve.

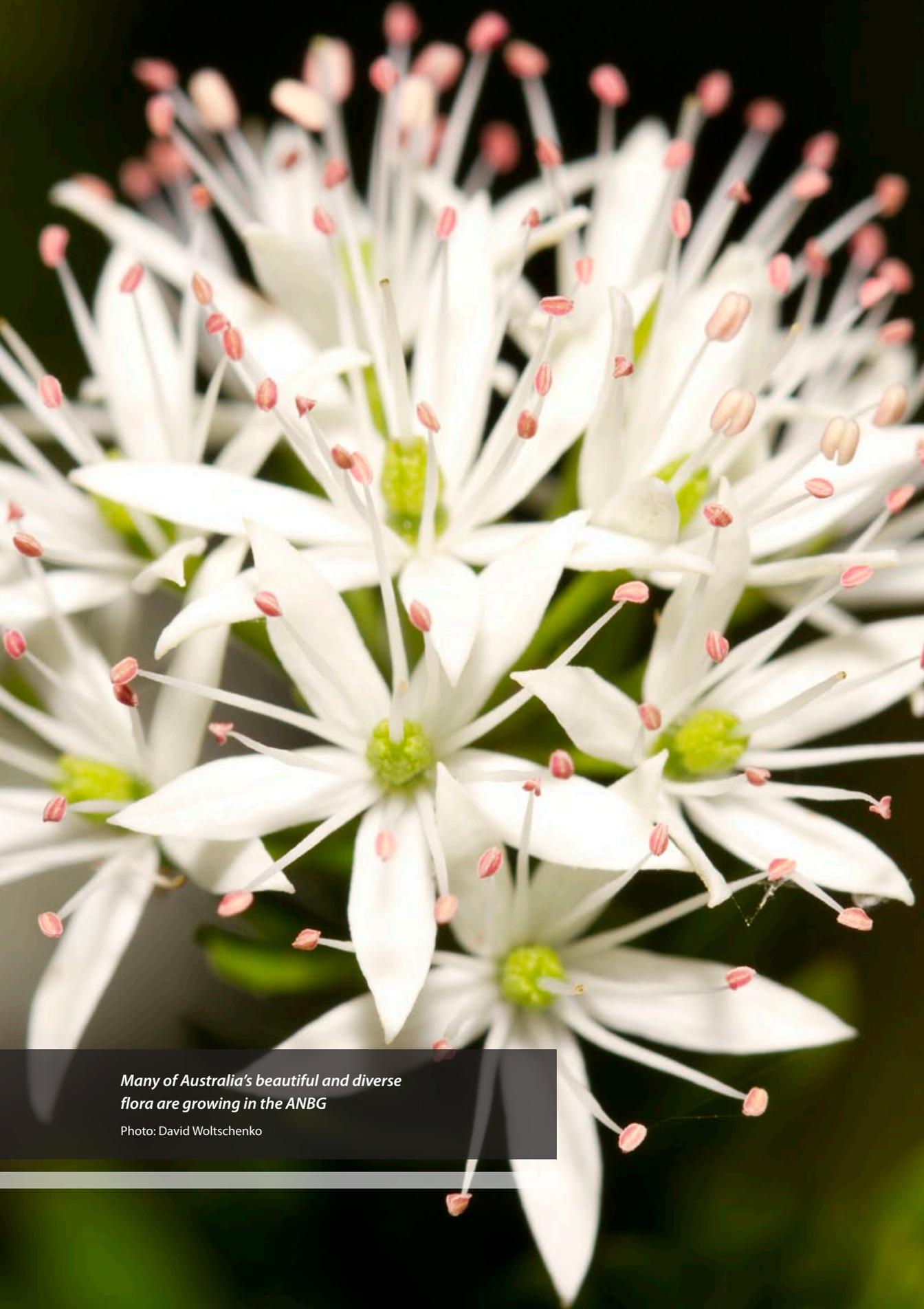
What we are going to do

Policy

- The ANBG is assigned to IUCN protected area category IV, habitat/species management area, and will be managed in accordance with the management principles set down in Schedule 8 of the EPBC Regulations (see Appendix C).

Action

- Ensure that management actions are undertaken in accordance with the relevant Australian IUCN reserve management principles.



*Many of Australia's beautiful and diverse
flora are growing in the ANBG*

Photo: David Woltschenko

Natural heritage management

Goal 1: Manage the national botanic garden to showcase Australia's plants

Direction setting

The ANBG will continue to curate Australia's national living collection to inspire, inform and connect people to Australian flora and provide a reference source which supports botanical and horticultural science within the ANBG, as well as supporting the work of other academic institutions. The collection is a representation of Australia's unique plant diversity and several parts of the collection are displayed to illustrate ecosystems and landscapes. Increasingly, conservation will influence the development of the living collection. There will be a greater emphasis on using the collection to connect people with plants through various display, design and communication techniques and learning at all ages will be encouraged. These key directions will be documented in the Living Collection Policy and Thematic Planting Guide.

Innovative and best practice approaches to horticulture, suitable for Australian native plants, will continue to guide the display, management and development of the collection. Many native Australian plants have never been grown in cultivation. Therefore, the pioneering work undertaken at the ANBG in the cultivation of native plants will continue to make important contributions to the horticultural industry, as well as to integrated conservation management. The ANBG will continue to make a significant contribution to improving understanding of the horticultural requirements of Australian plants through horticultural experimentation, documenting successful techniques, and exchanging information with botanic gardens, other interested horticultural groups and industry.

Performance indicator

The following indicator will be used to measure performance in meeting Goal 1:

- Annual audits of the curatorial standards of the living collection indicate a high degree of compliance with the Living Collection Policy and ANBG Thematic Planting Guide.

1.1 Development, management and curation of the living collection

Background

The living collection is one of the ANBG's most important assets. It is the world's largest living collection of Australian plants which is largely wild sourced and scientifically documented with voucher specimens stored at the Australian National Herbarium. There is also a collection of Australian cultivars that have been provided through the Australian Cultivar Registration Authority Incorporated (see Sections 5.3, Development, management and curation of the herbarium collection, and 7.1, National and international roles).

The living collection reflects Australia's plant diversity and represents around one-third of known flowering plant species that occur in Australia. The collection is an important resource for science and learning and makes a significant contribution to botanical and horticultural knowledge. The collection is currently displayed according to several themes including taxonomy, ecology and geography, horticulture, conservation, ethnobotany and mixed plantings for general aesthetic effect.

Under ss.354 and 354A of the EPBC Act, a person may not kill, injure, take, trade, keep or move a member of a native species except in accordance with a management plan. The EPBC Regulations also prohibit taking animals and plants into the ANBG, and cultivating plants in the ANBG, except with the approval of the Director.

Actions taken in a Commonwealth reserve in accordance with a management plan in relation to members of species listed under Part 13 of the Act are exempt from prohibitions that would otherwise apply under Part 13.

Aims

- The national living collection is developed, maintained and secured to a high curatorial standard in accordance with the ANBG Thematic Planting Guide and Living Collection Policy to support the goals of the ANBG.
- Scientific and horticultural research and learning are encouraged.
- Opportunities for inspiring recreational and learning experiences are provided for visitors through the development of thematic plant displays using excellence in horticulture, interpretation and landscape design.

Issues

- Adequate staff and financial resources are needed to ensure a high curatorial standard for the existing living collection and to further develop the living collection and landscape.
- There is a need to understand the implications of climate change and other potential threats to the security of the living collection and to maximise the resilience of the site to potential impacts.
- Further work is required on the proactive management of known threats to the living collection including pests and diseases. These include insects, viruses, fungi (e.g. the fungal pathogen *Armillaria luteobubalina*) and vertebrate pests (including rabbits, hares, rats and native animals such as eastern grey kangaroos, swamp wallabies and Australian wood ducks).
- Naturally occurring trees on the site and those introduced from other parts of Australia need to be maintained and managed for their conservation value and public safety.
- There is a need for greater integration of the horticultural, scientific and educational disciplines in terms of the curation and interpretation of the living collection.

What we are going to do

Policies

- 1.1.1 The living collection will be managed to a high curatorial standard and developed to display a representation of Australia's flora and that of related regions, consistent with the ANBG Thematic Planting Guide and Living Collection Policy.
- 1.1.2 The development and implementation of best practice horticultural management will be based on scientific knowledge, on-site experimentation, excellence in horticultural practices and staff expertise.
- 1.1.3 The Material Acquisition Agreement Policy and Procedures will guide both the acquisition of biological resources to enhance and maintain the ANBG collections and access to the ANBG's biological resources (see Section 5.5, Access to biological resources and benefit-sharing). The policy and procedures accord with the EPBC Act and Regulations and Australia's obligations under the CBD and CITES and be reviewed as necessary.
- 1.1.4 Nursery and landscape supplies including mulches, soils and other appropriate materials may be brought into the ANBG for the purpose of developing, enhancing and maintaining the collections.
- 1.1.5 Unwanted plant materials may be removed from the ANBG for appropriate disposal and diseased plant materials may be burnt on-site.
- 1.1.6 The nursery may propagate plants for conservation or commercial activities.
- 1.1.7 The Director may take, or issue permits to take, actions concerning native species, including species listed under Part 13 of the EPBC Act, that are otherwise prohibited by the EPBC Act where they are necessary to implement this plan, or where they are otherwise necessary for preserving or protecting the ANBG, protecting or conserving biodiversity, or protecting persons or property.
- 1.1.8 Organisations and individuals may carry out research and monitoring on the living collection, including taking actions covered by ss.354 and 354A and Part 13 of the EPBC Act:
 - in collaboration with the Director, under an agreement or
 - in accordance with a permit issued by the Director.
- 1.1.9 The ANBG will encourage and support relevant research and monitoring. Permits authorising research and monitoring will be issued in accordance with conditions set down in the EPBC Regulations, for example:
 - the activity will not threaten the conservation status of a species or collections
 - the activity will not adversely impact on any of the ANBG values
 - the activity will not contravene any existing agreements determining the use of the biological material.

- 1.1.10 Comprehensive databases of information and records on the status of the living collection will be maintained for public information and to facilitate curation and research. Records will be enhanced and linked with herbarium vouchers (see Section 5.3, Development, management and curation of the herbarium collection).
- 1.1.11 The living collection will be protected from damage through monitoring, preventative measures and integrated pest management and control techniques. These may include the use of pesticides or herbicides or other poisonous substances on plant, insect, mite, viral and fungal pests. Vertebrate pests will be managed according to Action 2.3.10.
- 1.1.12 Priority will be given to retaining naturally occurring trees on site based on their landscape and ecological values and subject to public safety considerations.
- 1.1.13 Specialist horticultural consultants will be engaged where expertise is not available within the ANBG.

Actions

Plant records

- 1.1.14 Enhance plant labelling and record keeping of the living collection in accordance with the ANBG Living Collection Policy and operational guidelines. Complement labelling through thematic interpretation of selected collections (see Section 5.3, Development, management and curation of the herbarium collection).
- 1.1.15 Enhance the living collection database to appropriately support management of the living collection, research, accessibility of horticultural information and integrated conservation management.
- 1.1.16 Develop and implement a fully integrated and computerised plant records management system e.g. barcoding plants and digital mapping.
- 1.1.17 Conduct a regular census of the garden beds to check names and accession details against Integrated Botanical Information System (IBIS) data.
- 1.1.18 Investigate and implement suitable options for recording horticultural field data.

Collection development

- 1.1.19 Continue to develop and implement best practice horticulture suitable for native plants.
- 1.1.20 Develop principles to guide future landscape design in relation to the living collection.
- 1.1.21 Enhance living collection maintenance and landscape development and redevelopment, in a manner consistent with the outcomes identified through the living collection review (see also Action 1.1.23).
- 1.1.22 Review the ANBG Thematic Planting Guide and make any resulting changes to garden section plans.

Collection management

- 1.1.23 Undertake and implement recommendations from a living collection review every five years to guide future acquisition priorities and the review of the ANBG Thematic Planting Guide and development of a detailed Living Collection Policy.
- 1.1.24 Develop, document and implement curatorial standards for the living collection.
- 1.1.25 Audit curatorial standards, nursery and seed bank procedures every five years and implement recommendations through annual work plans.
- 1.1.26 Develop and implement strategies to increase cross disciplinary collaborations at the ANBG to enhance the development of the living collection, ensure its value in a national context and increase its use for scientific and horticultural research, conservation and education.
- 1.1.27 Finalise the development of garden section plans to facilitate experimentation and documentation of horticultural management practices and procedures and to assist in maintaining high curatorial standards.
- 1.1.28 Develop and implement a tree management strategy for naturally occurring trees and those introduced from other parts of Australia, including a succession replacement plan and a maintenance program for monitoring tree health and human safety (see Sections 2.2, The ANBG landscape, and 2.3, Remnant vegetation and wildlife monitoring and management).
- 1.1.29 Regularly revise and subsequently implement integrated pest management strategies, guided by the Pest Management Manual and current standards for safe handling, effective use and storage of pesticides.
- 1.1.30 Develop and implement appropriate control methods for vertebrate animals that threaten collections (see also Section 2.3, Remnant vegetation and wildlife monitoring and management).
- 1.1.31 Record and monitor occurrences of pests and diseases and implement appropriate control methods. These may include removal of tree stumps by excavation and/or burning.
- 1.1.32 Implement a research program focused on the security of the living collection in terms of climate change and other known threats.
- 1.1.33 Refurbish or replace ageing glasshouses to ensure the long-term viability of the glasshouse collections, including orchids.

Goal 2: Champion the conservation of Australian plants and the role of ex situ conservation in integrated conservation management

Direction setting

Developing better ways to protect Australia's unique biodiversity is a priority. Biodiversity and ecosystem conservation is reliant on science and integrated conservation management (in situ and ex situ conservation). As a national institution, the ANBG has an important role in supporting work to implement the Convention on Biological Diversity, including the Global Strategy for Plant Conservation (Secretariat of the CBD undated) and other relevant international and national agreements (see Section 7.1, National and international roles). The ANBG will draw on the expertise of its staff, partners and collaborators to champion the conservation of Australia's flora and associated ecosystems.

The ANBG, through CANBR, contributes to collating, interpreting and disseminating information on the classification, biology, distribution and conservation of Australian plants. Conservation biology is an increasing priority and project outputs will be communicated to both academic and non-academic audiences.

The ANBG will develop a strategic framework to assist the institution to respond to national biodiversity policies and programs. There is a need to focus on integrated restoration ecology and to develop horticultural science technology.

The ANBG will be an accessible centre of expertise for the department, other government agencies and academic institutions and individuals. It will support specific species recovery and other priority work related to ecosystem management, including controlling and eradicating environmental weeds. In addition, the ANBG will continue to give high priority to working cooperatively with various organisations on biodiversity conservation. It will maintain existing collaborations and build new relationships by hosting such organisations as the Australian Network for Plant Conservation (ANPC), the Australian Seed Bank Partnership (ASBP) and Botanic Gardens Australia and New Zealand Incorporated (BGANZ), the department's Australian Biological Resources Study and the Greening Australia Community Seed Bank.

A focus on increasing visitation to the ANBG, both to the site and online, will raise community awareness and understanding about the value of plant diversity, conservation and the sustainable use of biological resources in Australia and the valuable role of the ANBG and botanic gardens in general.

Achievement of this goal will result in the ANBG making important contributions to securing Australia's threatened flora and associated habitats using ex situ measures to support in situ conservation. The ANBG will be recognised for its high levels of staff expertise and contribution to biodiversity conservation and community well-being. Programs making information accessible to the Australian community will foster understanding and appreciation of conservation and the appropriate use of Australia's biodiversity.

Performance indicators

The following indicators will be used to measure performance in meeting Goal 2:

- Extent to which the ANBG's profile is raised through its contribution to conservation.
- Extent to which progress on projects has achieved conservation outcomes.
- Range and number of conservation related collaborations and partnerships.
- Extent to which scientifically based vegetation and wildlife monitoring and management programs are implemented at the ANBG.

2.1 Conservation and horticulture

Background

For several years, the ANBG has been actively involved in collaborative conservation projects drawing on its horticultural capability and CANBR's scientific expertise. Partnerships with a range of government and non-government organisations and corporations continue to produce positive outcomes in terms of species recovery, restoration ecology and environmental weed research. Conservation research and projects have seen important advances in knowledge about ecological relationships and have provided methodologies for future conservation efforts in translocation and biocontrol.

The ANBG seed bank has a major germplasm collection that can be used for conservation projects, as well as being a conservation project in its own right.

Under ss.354 and 354A of the EPBC Act, a person may not kill, injure, take, trade, keep or move a member of a native species except in accordance with a management plan. The EPBC Regulations also prohibit taking animals and plants into the ANBG, and cultivating plants in the ANBG, except with the approval of the Director.

Actions taken in accordance with a management plan in relation to members of species listed under Part 13 of the Act are exempt from prohibitions that would otherwise apply under Part 13.

Aims

- The ANBG is actively used and recognised as a centre of expertise supporting integrated conservation management in Australia.
- There is greater awareness of the role of the ANBG and other Australian botanic gardens in integrated conservation.

Issues

- There is a need to develop more strategic approaches to conservation research linked to horticulture and the living collection.
- Strengthening the ANBG horticultural conservation program and the CANBR conservation biology program will require significant financial and staff resources.

- Stronger formal partnerships and collaborations with other areas of the department, other government agencies and non-government organisations are needed.
- There is a need to raise the profile and increase awareness of the role of the ANBG and Australia's other botanic gardens in conservation work.

What we are going to do

Policies

- 2.1.1 The ANBG will provide a national focus for the use of horticulture in the conservation of Australian plants and ecosystems.
- 2.1.2 The ANBG will continue to support, host and collaborate with relevant like-minded organisations to strengthen and diversify the ANBG's role in conservation and to strengthen its staff expertise.
- 2.1.3 National biodiversity conservation priorities and environmental sustainability will inform the curation of the living collection, including the seed bank (see Policy 1.1.1).
- 2.1.4 The Director may take, or issue permits to take, actions concerning native species, including species listed under Part 13 of the EPBC Act, that are otherwise prohibited by the EPBC Act where they are necessary to implement this plan, or where they are otherwise necessary for preserving or protecting the ANBG, protecting or conserving biodiversity, or protecting persons or property in the ANBG.

Actions

- 2.1.5 Increase collaborations with existing partners and develop new partnerships to draw upon available expertise in horticulture and conservation biology. In collaboration with the ANBG's partners:
 - strengthen existing horticultural and scientific research disciplines including through collaborations and partnerships with academic and educational institutions
 - through the use of public programs and interpretive tools, promote public awareness and understanding of biodiversity, conservation and sustainable use of biological resources in innovative ways
 - undertake conservation projects of national significance
 - support national and relevant international plant conservation actions.
- 2.1.6 Initiate a research and education program for the introduction of rare, endangered and threatened plants into cultivation within the horticultural industry where appropriate, having regard to Policy 2.1.4.
- 2.1.7 Initiate greater involvement with, and continue to work collaboratively and undertake consultancies with, government and non-government agencies, corporations, industry and community groups in national priority conservation projects including seed banking, the translocation and recovery of species, restoration ecology and environmental weed control.

- 2.1.8 Further develop the seed bank as a repository for rare and threatened plant species by continuing to collect and maintain genetically significant living stocks of threatened and species of special interest, including variants, having regard to Policy 2.1.4.
- 2.1.9 Assess the role of the ANBG seed bank and plan for future use and development in line with the ANBG's role in the Australian Seed Bank Partnership.
- 2.1.10 Coordinate and contribute to the development of a national safety net for Australia's plant species and associated ecosystems through ex situ conservation to support integrated conservation management and seed, germplasm and associated mycorrhizal fungi conservation research.
- 2.1.11 Formalise arrangements with selected partners, including the Australian Cultivar Registration Authority Incorporated (ACRA), ANPC and BGANZ, through memorandums of understanding.
- 2.1.12 Contribute to the ongoing development of databases to support research on Australian and related plants, and communicate science and horticultural research to inform integrated conservation management (see Action 5.1.2).

2.2 The ANBG landscape

Background

The ANBG is an important component of Canberra's Central National Area landscape setting. The ANBG is recognised for its significant heritage values and listed on the Commonwealth Heritage List. Situated on the eastern slopes of Black Mountain, the ANBG provides strong visual links to such prominent landmarks as Parliament House, Lake Burley Griffin and Canberra's inner hills. In contrast to several other capital city botanic gardens in Australia, the ANBG does not face pressures from a growing metropolis and continues to sit sympathetically in the landscape alongside its CSIRO and Australian National University neighbours.

Around 35 hectares of the ANBG site have been developed along the lines of an informal botanic garden displaying native flora. The landscape character of the ANBG is enhanced by the extensive tree cover, composed of trees native to the Canberra area and from other parts of the continent. The succession of this tree landscape is an important consideration in terms of the sustainable management of the ANBG landscape.

Aim

- Sustainability principles are employed to enhance the landscape values of the ANBG, while reflecting its horticultural, scientific, educational and recreational roles.

Issues

- The visual impact of infrastructure and landscape developments within the ANBG on Canberra's landscape setting needs to be considered.
- Succession strategies for the tree landscape need to be developed (see Section 1.1, Development, management and curation of the living collection).

- There is an obligation to maintain the values for which the ANBG has been recognised and heritage listed.

What we are going to do

Policies

- 2.2.1 Landscape developments will reflect visitors' educational, functional and recreational needs, while giving full consideration to the ANBG's horticultural and scientific roles.
- 2.2.2 Landscape developments will:
- maintain and enhance the site's importance as part of the national capital's landscape, consistent with the National Capital Plan
 - maintain the heritage values recognised on the Commonwealth Heritage List
 - consider direct and indirect adverse impacts on native wildlife and the environment
 - integrate sustainability principles into their design.
- 2.2.3 Landscape developments will take advantage of potential visual and functional links to adjacent sites.

Actions

- 2.2.4 Prepare a site development plan to guide the location of proposed new developments that might include for example, a children's garden, new visitor centre and integrated works centre.
- 2.2.5 Maintain and develop the ANBG landscape to enhance visitor experiences.
- 2.2.6 Review the ANBG Design Guidelines (1992) to retain and improve sustainability and to provide a template for consistent, functional, safe, energy-efficient, aesthetic and environmentally sound development and maintenance suitable for the ANBG as a public scientific and educational institution.
- 2.2.7 Develop and implement a plan for succession management of the ANBG's tree landscape and other values for which it is listed on the Commonwealth Heritage List and the Register of the National Estate (see also Action 1.1.28).

2.3 Remnant vegetation and wildlife monitoring and management

Background

The ANBG is both a collecting institution and a Commonwealth reserve which requires the protection, conservation and management of natural and cultural heritage. The ANBG has a large area of native vegetation with its associated wealth of biodiversity and biological interactions. The ANBG is a wildlife habitat and performs an important role as a fauna refuge within Canberra's Central National Area. Its role as a refuge is expected to increase as a result of the ANBG having permanent water sources, habitats created through the cultivation and display of Australian flora, and the predicted effects of a changing climate on neighbouring lands. Maintaining a national

cultivated garden in association with the resulting changes in wildlife activity is expected to present increasing challenges. Particular fauna that will require ongoing monitoring include kangaroos, wallabies, snakes, nuisance birds and invasive animals such as rabbits, cats, foxes and rats.

The ANBG's main focus has been studying, promoting and growing Australian plants and consequently there are many gaps in knowledge and understanding of the site's fauna. Little is known about the less visible groups such as insects, reptiles and amphibians. There is also limited information available on mammal diversity and avian seasonality within the ANBG. Longitudinal studies on the eastern brown snake (*Pseudonaja textilis*), white-browed scrub wren (*Sericornis frontalis*), superb fairy wren (*Malurus cyaneus*) and white-winged chough (*Corcorax melanorhamphos*) provide a basis on which to further develop research and monitoring programs that collect longitudinal data on wildlife populations and their associated impacts. The scientific evidence obtained from these programs will guide the development of wildlife management practices, including appropriate control methods, to ensure protection of the living collection and visitor safety.

Most of the available information on the biodiversity and ecological communities conserved within the ANBG has come from observations and ad hoc research undertaken by university staff, students and community groups. Enhanced cooperation in sharing resources and expertise between the ANBG, academic institutions, conservation agencies and community groups would help achieve mutual conservation objectives.

Under ss.354 and 354A of the EPBC Act, a person may not kill, injure, take, trade, keep or move a member of a native species except in accordance with a management plan. The EPBC Regulations also prohibit taking animals and plants into the ANBG, and cultivating plants in the ANBG, except with the Director's approval.

Actions taken in accordance with a management plan in relation to members of species listed under Part 13 of the Act are exempt from prohibitions that would otherwise apply under Part 13.

Under r.12.10 of the EPBC Regulations research may not be undertaken in the ANBG unless it is provided for by, and carried out in accordance with, a management plan in force for the ANBG; or is authorised by a permit, or under certain other conditions (r.12.06). Research which involves taking, keeping or moving native species, or is undertaken for commercial purposes, is prohibited by ss.354 and 354A of the EPBC Act except where undertaken in accordance with a management plan.

Aims

- A healthy remnant ecosystem is maintained that both promotes the regeneration of native vegetation and the conservation of wildlife habitat and acts as a buffer between the living collection and the surrounding Canberra Nature Park.
- The ANBG is valued as habitat for native wildlife.
- A scientifically based remnant vegetation and wildlife monitoring and management program is developed and implemented that adapts to changing circumstances, including the effects of climate change.

Issues

- Robust monitoring and associated scientific data are needed to assess and manage impacts and risks of climate change.
- Regular vertebrate pest monitoring is needed to inform and implement a vertebrate pest management strategy.
- There is a need to consider the likely impacts of climate change including:
 - increased fuel loads and fire danger, particularly in the surrounding Canberra Nature Park
 - changes in abundance and distribution of some plant and animal species and the potential threat to the living collection and to the ANBG's scientific and educational roles
 - extreme weather events and the associated risks to the collections, staff, lessees and visitors.
- Bird feeding by visitors has changed bird behaviour patterns, creating a nuisance and risk to visitors and requiring active management.

What we are going to do

Policies

- 2.3.1 If parts of the ANBG landscape are changing in ways that are of concern, the Director, in consultation with relevant stakeholders, will decide on further monitoring requirements and will implement protective, rehabilitative or adaptive measures where feasible and appropriate.
- 2.3.2 Pockets of remnant vegetation which extend into the developed parts of the ANBG will be retained with only minor modifications, such as canopy reduction or ecologically appropriate understorey plantings. Mature trees will be retained, subject to risk assessment, for their landscape or wildlife habitat values.
- 2.3.3 The ANBG will be managed in a manner which provides habitat for sustainable populations of native animals.
- 2.3.4 Research and monitoring will be managed in accordance with Goal 5, Increase knowledge of Australian flora through outstanding research activities.
- 2.3.5 The Director may take, or issue permits to take, actions concerning native species, including species listed under Part 13 of the EPBC Act, that are otherwise prohibited by the EPBC Act where they are necessary to implement this plan or where they are otherwise necessary for preserving or protecting the reserve, protecting or conserving biodiversity, or protecting persons or property in the ANBG.

Actions

Remnant vegetation management

- 2.3.6 Manage the ANBG's boundaries as a fire buffer zone between the higher forested slopes of Black Mountain and the developed landscape zones of the ANBG.
- 2.3.7 Implement weed control programs to prevent the spread of both exotic and native species from the developed part of the ANBG into the undeveloped areas and adjacent conservation areas (including the southern section of the ANBG).

- 2.3.8 Assist and provide expertise, where practical, for managing remnant vegetation on neighbouring lands.
- 2.3.9 Develop and implement a fire plan for the reserve in collaboration with the ACT Emergency Services Authority and fire ecologists from the ACT Government agency responsible for the management of public reserves.

Wildlife monitoring and management

- 2.3.10 Monitor populations of vertebrate pests, including rats, foxes, rabbits and cats, and implement appropriate scientifically based and humane management strategies to reduce adverse impacts (see also Action 1.1.11).
- 2.3.11 In consultation with relevant stakeholders, monitor populations of native animals and their impact on the site and implement control measures where appropriate.
- 2.3.12 Prepare and implement a strategy for the monitoring and management of invasive and pest wildlife and implement appropriate scientifically based management strategies consistent with relevant legislation.
- 2.3.13 Manage and monitor the incidence of snakes in accordance with the ANBG's Snake Management Policy and Plan to conserve the natural abundance of snakes and to minimise risks to visitors.
- 2.3.14 Implement and monitor a public awareness program to discourage bird feeding.



The ANBG provides a place of lifelong learning for visitors of all ages

Photo: JinkyArt

Use and appreciation of the ANBG

Goal 3: Create an inspirational place for enjoyment and learning

Direction setting

The living collection supports recreational and learning experiences that contribute to the cultural enrichment of the Australian community and of visitors and increase awareness and appreciation of the value of the ANBG and its collections. The living collection will be supported by comprehensive, scientifically accurate plant labelling. Appropriate landscape design will be incorporated into future garden developments to capture the essence and characteristics of the Australian landscape and ecosystems. Interpretive tools will be used to engage visitors and tell Australian stories that connect people with plants and ecosystems. The Public Art Program will be strengthened and professional artists will be encouraged to engage in the work of the ANBG, interpret the values of the living collection and create artistic interpretations of Australian native plants and of broader issues facing the Australian environment.

Achievement of this goal will result in recognition of the ANBG as a quality visitor experience among national capital attractions as well as an online destination. The well displayed collections will be based on sustainability principles and provide visitors with enjoyable, inspirational and educational experiences that enhance understanding and appreciation of the values of the ANBG and Australia's unique flora and landscapes.

Performance indicators

The following indicators will be used to measure performance in meeting Goal 3:

- Overall visitor satisfaction with the ANBG, expressed through visitor surveys, is 90 per cent or higher.
- Visitor impacts on the values of the botanic garden are minimised, particularly during planned events.

3.1 Recreation and visitor management

Background

The ANBG is a haven for many visitors seeking passive recreation, peaceful reflection and to socialise with friends and family. Enjoyment of the ANBG can foster positive community attitudes towards botanic gardens and Australian plants and can motivate visitors to learn about and make use of the botanical and educational resources available at the ANBG.

Catering for community interests such as art and craft, entertainment and exercise forms part of planning suitable recreational experiences for visitors. A longitudinal visitor study undertaken

with the University of South Australia provides a tool to monitor the quality of ANBG visitor services and facilities. Road and pedestrian counters monitor visitor levels and patterns. Ongoing evaluation of education activities and events provides comprehensive visitor satisfaction data.

ANBG visitor services and facilities are supported by commercial operations (see Section 3.2, Commercial operations). The café and bookshop provide services for visitors such as catering, souvenirs and literature. Other visitor services, including the hire of facilities for private functions such as weddings, supports the ANBG's recreational and community role and the work of the institution through revenue generation (see Section 3.2, Commercial operations). Activities which do not compromise the botanic garden values or interfere with the enjoyment of other visitors to the ANBG are encouraged.

The EPBC Act (ss.354 and 354A) prohibits commercial actions in the ANBG, except in accordance with a management plan. Recreational activities that are prohibited by the Regulations may be carried out under a permit issued by the Director of National Parks, or in accordance with a management plan (rr.12.06(2)).

The EPBC Regulations control, or allow the Director to control, a range of activities in the ANBG. These include:

- Regulation 12.19 prohibits taking an animal into the ANBG, including, but not limited to, pets and horses. Guide dogs and other assistance animals used by persons with a disability are allowed into the ANBG under the Regulations.
- Regulation 12.23 enables the Director to prohibit or restrict a person walking on a vehicle access road, vehicle access track or track normally for walking or riding.
- Regulation 12.23A enables the Director to prohibit or restrict an activity or a class of activities and r.12.23 enables the Director to prohibit or restrict access to all or part of a Commonwealth reserve.
- Regulation 12.30A prohibits lighting fires except in a portable barbecue or stove, a fireplace provided by the Director, or a place approved by the Director.
- Regulation 12.31 prohibits public gatherings of more than 15 persons without a permit.
- Regulation 12.32 prohibits the burial of human remains in a Commonwealth reserve.
- Regulation 12.33 prohibits the erection of commemorative markers unless the activity is allowed in accordance with a management plan or a permit issued by the Director.
- Regulation 12.41 prohibits use of motor vehicles other than on a vehicle access road or a vehicle access track, or in a parking area.
- Regulation 12.55 prohibits walking or riding (e.g. bicycles) other than on a vehicle access road or a vehicle access track, or on a track for walking or riding provided by the Director (as designated by a sign or in a management plan).

The ANBG has a Visitor Code to guide visitors to act appropriately and safely.

Under s.356A of the EPBC Act the Director may determine and impose charges for entering or using the ANBG or part of the ANBG, using services or facilities provided by the Director in or in connection with the ANBG, and parking or stopping vehicles in the ANBG.

Aim

- Visitors enjoy and appreciate the experience of visiting the ANBG and their use is consistent with the values of the ANBG.

Issue

- The management challenge is to strike a balance between providing rewarding recreational opportunities to a diversity of visitors and maintaining the ANBG's scientific and educational role.

What we are going to do

Policies

- 3.1.1 An appropriate network of walking tracks, infrastructure and information will be provided and maintained to support and enhance the visitor experience (see Section 9.1, Capital works and infrastructure).
- 3.1.2 Bicycle riding in the ANBG is restricted to public vehicle access roads and the car park.
- 3.1.3 Private vehicle use is restricted to public vehicle access roads and the car park unless provided for by a permit issued by the Director. The Director may further close or restrict access to roads and walking tracks for management or safety reasons.
- 3.1.4 Motorised or non-motorised wheel chairs and mobility assistance vehicles may be operated on walking tracks.
- 3.1.5 To ensure the enjoyment of visitors is not disturbed by certain recreational activities and to reduce risk to visitor safety, staff and ANBG values, the following activities will be prohibited by the Director under r.12.23A:
 - ball games, frisbee throwing and kite flying
 - use of skateboards, scooters and rollerblades
 - lighting fires and using portable barbeques and stoves
 - any other activity that the Director considers poses a risk to visitors, staff or ANBG values, or causes unreasonable disturbance to the enjoyment of visitors.
- 3.1.6 From time to time the ANBG will host recreational activities and events which may involve collaborations with non-commercial or commercial partners and sponsors (see also Section 8.2, Revenue and financial management).
- 3.1.7 The Director may issue a permit or licence for exclusive or limited rights to carry on a particular activity, or to provide exclusive use of an area within the ANBG for appropriate private functions and commercial activities and events (such as musical performances and theatre) where these are in keeping with the goals and policies of this plan and do not unreasonably impede enjoyment of the ANBG by other patrons.
- 3.1.8 Parking fees will continue to be charged under s.356A of the EPBC Act and will be reviewed, and may be revised, periodically (see also Section 8.2, Revenue and financial management).

- 3.1.9 Burials, including the scattering or other disposal of ashes that are or include human remains, will not be permitted in the ANBG.
- 3.1.10 The Director may issue a permit for a public memorial service involving more than 15 people. The number of persons in the gathering may be restricted and the service must not obstruct or disturb a person engaged in the proper use of the reserve.
- 3.1.11 The Director may erect or install commemorative markers, or dedicate a seat, infrastructure or place within the ANBG to a person, persons or group as a commemorative marker and may charge an appropriate fee for the service (see also Section 8.2, Revenue and financial management).
- 3.1.12 The ANBG Public Art Master Plan will guide the planning, commissioning, acquisition and installation of permanent artworks in the ANBG.

Actions

- 3.1.13 Working closely with partners, including the Friends of the Australian National Botanic Gardens, develop and implement an annual program of recreational and informal learning activities and events, consistent with the ANBG's mission and goals (see Action 4.2.30).
- 3.1.14 Develop a variety of experiences within the ANBG for children (see Section 4.2, Education (schools, community and outreach)).
- 3.1.15 Reconvene the Public Art Committee and initiate review and implementation of the ANBG Public Art Master Plan (2001).
- 3.1.16 Survey visitors and stakeholders to monitor satisfaction, demographics, visitation habits and perceptions of the ANBG.
- 3.1.17 Monitor and report annually on the use (including for research and education) of the ANBG by different stakeholder groups to demonstrate its value for learning.
- 3.1.18 Review the ANBG Visitor Code and make it available to visitors and permit holders through various media including the internet, signs and publications.

3.2 Commercial operations

Background

Commercial activities can enhance the range and quality of available visitor services and experiences, attract visitors who may not otherwise come to the ANBG, and raise revenue to support management of the ANBG.

Under ss.354 and 354A of the EPBC Act commercial activities can only be carried on in accordance with a management plan.

At the time of preparing this plan a limited range of commercial activities are being carried on. The café and bookshop operate under licence agreements with the Director. Given the diversity of Australian flora at the ANBG in an accessible location, it is also used for commercial filming and photography. Opportunities can arise to increase the number and range of appropriate commercial activities.

Aim

- Appropriate commercial operations which enhance visitor experiences and promote ANBG values are encouraged.

Issues

- There is a need to ensure that commercial activities operate in ways that protect and enhance ANBG values through considering such factors as improved infrastructure, service vehicle access, waste management and after hours security.
- There is a need to balance the aesthetics of a public garden with the storage and operating requirements of businesses operating in the gardens.
- Attracting more visitors and increasing use of the ANBG throughout the year, including during the winter months, could help enhance the viability of commercial operations.

What we are going to do

Policies

- 3.2.1 Subject to the other policies in this section commercial activities may be carried on in accordance with a lease, licence or permit issued by the Director.
- 3.2.2 Commercial leases or licences for land in the ANBG for commercial activities may be granted in accordance with Section 8.6, Leases, licences and associated occupancy issues.
- 3.2.3 The ANBG will work with commercial operators to ensure high levels of customer service and facilitate opportunities for joint activities and cross promotion.
- 3.2.4 Proposals for new commercial activities will be considered and assessed having regard to:
 - the activity's consistency with the maintenance of ANBG values and protection of ANBG assets
 - benefits to the ANBG and its visitors and any impact on the aesthetic values of the ANBG
 - risk to visitors and other safety issues
 - impacts on other users
 - the cost to the Director of managing and monitoring the activity (see also Section 9.3, Assessment of proposals).

- 3.2.5 Proposals for commercial activities will be encouraged where they directly contribute to the ANBG's goals.
- 3.2.6 Commercial photographers engaged by wedding parties will not require a permit to capture images of wedding ceremonies.
- 3.2.7 Members of the media and media organisations will not require a permit for commercial image capture in connection with reporting news/events of the day.

Actions

- 3.2.8 Develop and regularly review policies and procedures relating to management of commercial operations.
- 3.2.9 Manage contractual arrangements for commercial operators including leases and licences (see also Section 8.6, Leases, licences and associated occupancy issues).

Goal 4: Engage communities in valuing and conserving Australia's natural and cultural heritage

Direction setting

The ANBG strives to connect people with Australia's rich natural and cultural heritage in ways that will stimulate them to value Australia's plants and ecosystems and understand and contribute more responsible environmental stewardship. Providing access for all members of the community will be a priority across the public programs to ensure all Australians can engage with ANBG programs and services.

Education and public programs will provide high calibre experiences and learning opportunities to deepen understanding of the role plants play in our lives. The ANBG will broaden its ability to tell stories of Australia's natural and cultural heritage through partnerships with diverse institutions and organisations.

ANBG education programs will be recognised for their innovative approach to school curriculums and university syllabuses. New and existing programs will encourage greater involvement by tertiary students in research and project studies.

The ANBG will take a proactive approach to building collaborations with national and state institutions. These collaborations will aim to build awareness within the community, engage communities more effectively and strengthen the ANBG's position as a scientific institution and national resource. Supporting regional botanic gardens will also help to engage more Australians in valuing the nation's natural and cultural heritage and encourage active participation in conservation work.

People of all ages will be encouraged to engage with volunteer projects and research that supports the work of the ANBG and CANBR. This will build on the existing volunteer program and expand community involvement.

In line with other leading national institutions, the ANBG will continue to provide opportunities for discussion and understanding of plants and biodiversity using the rich internet content of the ANBG and its partners. Appropriate social networking tools will provide opportunities for the wider national and international community to engage with the work of the ANBG and with Australian plants. The interactive approach will be supported by appropriate social media tools and keep pace with the latest trends in electronic communication.

Achievement of this goal will result in an increased stakeholder participation in plant conservation, heightened public awareness and appreciation of the values of the ANBG and its role in the conservation and appropriate use of Australia's biodiversity.

Performance indicators

The following indicators will be used to measure performance in meeting Goal 4:

- Overall on-site and online visitor satisfaction with the ANBG experience, expressed through visitor surveys, is 90 per cent or higher.

- There is an increase in the number of visitors to the Australian Capital Territory that indicate through visitor surveys that they visited or intend to visit the ANBG.
- Surveys of teachers/groups leaders (on-site and online) reveal a satisfaction of 90 per cent or higher with services.
- Post-visit evaluation of activities shows that key themes have been communicated to the majority of participants.
- There is an increase in the range and quality of interpretive tools used to engage with people of all ages and backgrounds.

4.1 Public programs

Background

To encourage a wide variety of people to visit the ANBG and engage with plants, the ANBG needs to be well informed about the needs and expectations of its current and potential clients and to be innovative in attracting and serving its visitors to ensure it is an inspiring place to visit.

Through marketing and promotion, the ANBG's profile will be raised in line with those of other national institutions in Canberra to continue to attract a diverse audience. Effective interpretation and information services are vital in connecting people with the living collection, encouraging a high rate of repeat visitation and raising community awareness of plant conservation and environmental sustainability issues (see Section 4.5, Interpretation). The ANBG will deliver both on-site and online modes of 'visiting' the ANBG, drawing on its rich knowledge of native flora and Australia's natural and cultural heritage.

The ANBG public programs are strongly supported by the Friends of the Australian National Botanic Gardens, who draw on a vast source of community knowledge to connect visitors with the ANBG and its living collection and scientific activities. The Friends also provide a vital link between the ANBG and the community.

Aim

- The ANBG is recognised as a premier cultural and nature-based attraction for learning about and valuing Australian plants by offering outstanding experiences to its diverse on-site and online visitors.

Issues

- There is a need for an appropriately located visitor centre that is integrated with all the key visitor services and facilities on site and suitably linked to car parking facilities (see Section 9.1, Capital works and infrastructure).
- A high standard of temporary indoor and outdoor exhibitions that enhance the visitor experience throughout the year needs to be maintained.
- There is a need to manage the content of volunteer guide activities including storytelling.

- Delivering the necessary information technology to engage the non-scientific online visitor will require new and additional resources and skill sets.
- Increased communication and collaborations between ANBG and CANBR staff will strengthen the ANBG's science profile.
- Evaluation tools are needed to consistently monitor the effectiveness and quality of public programs.
- Promotion and delivery of public programs is resource intensive.

What we are going to do

Policies

- 4.1.1 The ANBG's educational facilities, school and community learning programs and resources will be designed for people of all ages, abilities and backgrounds and will be publicised to encourage their use, particularly by teaching and learning institutions.
- 4.1.2 The visitor centre will be open on all days that the ANBG is open and will be maintained as an appealing place for visitors to learn about the values of the ANBG and Australian plants.
- 4.1.3 Indoor and outdoor exhibitions on a wide range of topics related to ANBG goals will be displayed.
- 4.1.4 Volunteer guides will be encouraged to maintain an active service, supporting the ANBG's public programs.
- 4.1.5 Where appropriate, corporate and philanthropic support will be sought to support the ANBG's public programs.

Actions

- 4.1.6 Develop, implement, monitor and evaluate an annual schedule of public programs to ensure effectiveness and relevance.
- 4.1.7 Provide a variety of effective learning opportunities via the internet and associated media. Provide an online facility for all visitors to correspond with the ANBG, other visitors and relevant institutions and discuss science, research and community engagement.
- 4.1.8 Provide suitable media to enhance the visitor experience, including publications and audio tours.
- 4.1.9 Work collaboratively with the Friends of the Australian National Botanic Gardens to provide a high quality interpretative services through guided tours.
- 4.1.10 Establish effective working groups to manage and deliver visitor services and strengthen collaborations among ANBG and CANBR working units e.g. an exhibition working group.
- 4.1.11 Implement a two-year (cyclical) exhibition schedule and an annual schedule of public programs.
- 4.1.12 Review visitor orientation methods regularly, paying particular attention during redevelopment of plant displays and tracks for walking. See also Policy 3.1.2 and 3.1.3 for restrictions on access.

- 4.1.13 Develop and implement a strategy for securing corporate and philanthropic support for public programs (see Section 8.2, Revenue and financial management).

4.2 Education (schools, community and outreach)

Background

Botanic gardens are places of learning and they support young Australians to be active and informed citizens through unique and 'hands on' learning experiences. As Australia's national botanic garden located in Canberra, the ANBG is in a unique position to engage with the over 100,000 students annually visiting Canberra on excursions from schools throughout Australia. In addition, the ANBG has and will continue to develop long-term relationships with teachers and students from Canberra and regional schools.

With an emphasis on the process of life-long learning, ANBG education services will be linked with the learning standards outlined in the Australian national curriculum. The ANBG will continue to work collaboratively with Botanic Gardens Australia and New Zealand Incorporated (BGANZ) and regional botanic gardens to connect young people and teachers with Australia's natural heritage and the Australian environment.

In a world increasingly using technology, the internet and associated technologies are important tools to establish online learning communities across Australia. The ANBG online experience will be an extension for those who visit the ANBG, as well as engaging with people unable to physically visit the site. As rapidly changing technology and new cultural patterns evolve, new learning techniques will emerge. These new learning techniques, supplemented with the standard tools, will enable the ANBG to engage with diverse new audiences.

Aims

- Activities and resources are available for educational institutions, their staff and students and for the public.
- On-site and online visitors are able to learn about Australian and related plants in a way that promotes understanding of the connections between people, plants and the environment, and of the role that plants play in a sustainable future.

Issues

- A comprehensive education section for a national institution requires ongoing resources and expertise.
- There is a need for unique learning programs for interstate schools and an increased focus on programs for secondary and tertiary institutions.
- Innovative online learning experiences will add to the ANBG's ability to support a wider audience.
- A stronger relationship with regional botanic gardens needs to be developed to enhance educational collaborations and raise the profile of botanic gardens in education.

What we are going to do

Policies

- 4.2.1 The ANBG Education Section will employ a cross-curriculum approach focusing on Australian plants, Australia's natural environment and biodiversity, and contemporary threats to Australia's biodiversity (see also Section 2.3, Remnant vegetation and wildlife monitoring and management).
- 4.2.2 People with special learning needs will be catered for in educational material and presentations.
- 4.2.3 The ANBG will consult and work collaboratively with Aboriginal and Torres Strait Islander people in developing programs relating to the traditional use of Australian plants.
- 4.2.4 Online learning tools will support the process of voluntary and self-directed learning for all ages.
- 4.2.5 Education activities and the program overall will be regularly evaluated.
- 4.2.6 The ANBG will offer both indoor and outdoor activities for students with an emphasis on facilitated activities.
- 4.2.7 Education presenters will be recruited and trained to assist in a range of activities and employed on an 'as needs' basis. The presenters' performance will be evaluated and monitored.
- 4.2.8 Trained volunteers may support the delivery of education services.
- 4.2.9 Work experience placements may be provided for secondary and tertiary students to gain experience from the ANBG education program.
- 4.2.10 ANBG education services will be actively promoted to teachers and academics.
- 4.2.11 Charges will apply for some education activities, programs and sessions in accordance with the Schedule of Charges (see also Section 8.2, Revenue and financial management).
- 4.2.12 The ANBG will continue to offer facilities to work in partnership with adult community organisations that deliver products and services that are consistent with the ANBG's values.

Actions

Institution

- 4.2.13 Investigate opportunities for sponsored education positions.
- 4.2.14 Develop and foster appropriate collaborations and partnerships to support the delivery of education services.
- 4.2.15 Review key climate change and biodiversity messages and develop a consistent approach in collaboration with all Australian botanic gardens in conjunction with the Department of Climate Change and Energy Efficiency.

Education services (early years to Year 12)

- 4.2.16 Redevelop the curriculum-based education program in line with the Australian national curriculum.
- 4.2.17 Develop and apply evaluation and monitoring tools to measure the quality and effectiveness of education services. Use the findings to prepare regular assessments and vary activities as appropriate.
- 4.2.18 Produce online resource materials on a range of topics including providing curriculum-based learning opportunities to meet the needs of teachers and communicate the ANBG's scientific, cultural and conservation values.
- 4.2.19 Develop and implement a program to build the capacity of teachers from local and regional schools to provide innovative learning activities about Australian plants.
- 4.2.20 Develop partnerships with national and local institutions, other botanic gardens and similarly focused organisations to strengthen and provide innovative ANBG education products and services.
- 4.2.21 Develop specific programs for interstate schools to encourage increased visitation to the ANBG.

Tertiary learning

- 4.2.22 Investigate the feasibility of developing partnerships with local tertiary institutions to work collaboratively in research and education with the aim of increasing the value and raising the profile of the ANBG's work, in conjunction with CANBR, in botany, taxonomy, systematics and integrated conservation management.
- 4.2.23 Continue to support the Australian National Herbarium's internship programs.

Outreach

- 4.2.24 Work with regional botanic gardens to develop educational materials on Australian plants.
- 4.2.25 Develop and evaluate online resources to support the outreach program and provide pre-visit and post-visit educational materials.

Community learning

- 4.2.26 Develop and conduct a program of activities to support approved celebratory events.
- 4.2.27 Pursue opportunities to develop new community partnerships to strengthen the ANBG's educational work.
- 4.2.28 Facilitate an annual public program of activities to encourage the valuing of Australia's natural and cultural heritage, the active conservation of native plants and to communicate the ANBG's value as wildlife habitat.

4.3 Friends of the Australian National Botanic Gardens and volunteers

Background

The ANBG recognises the importance of strong community involvement and engagement. For many years, the ANBG has received a great deal of support from the community, particularly through the Friends of the Australian National Botanic Gardens, and this continues to be very important.

The Friends is a non-profit community based organisation incorporated under the *Associations Incorporation Act 1991* (ACT). Its objectives are to:

- support the ANBG
- increase community awareness of the ANBG's scientific, educational, conservation and recreation functions
- promote the ANBG's continued development
- serve as a link to encourage the use and enjoyment of the ANBG by the community.

Members of the Friends take part in a wide range of activities in, and in support of, the ANBG, including as volunteers (e.g. as guides), as part of the Friends' special interest groups (e.g. the Growing Friends) and on subcommittees. Activities may be conducted under the supervision of ANBG staff (as part of the ANBG's volunteer programs), in collaboration with the ANBG (e.g. the summer concert series, and collaborative projects) or independently (e.g. annual plant sales). The Friends also contributes funding to agreed ANBG projects and activities.

Other members of the community also participate in volunteer programs under the direction of ANBG staff.

The Friends' support is of significant value and benefit to the ANBG. Access to the ANBG and appropriate facilities for the conduct of the Friends' activities is essential to the Friends' ability to support the ANBG.

Aims

- Productive relationships with the Friends are maintained and strengthened to engage the community and to cultivate public understanding of and support for the ANBG's work.
- The Friends and other members of the community have the opportunity to volunteer and contribute to the ANBG's work.

Issues

- Developing and maintaining relationships and partnerships with the Friends can enhance support for ANBG values, help to manage issues of common interest and optimise use of resources.
- Guided walks provided by the Friends and volunteer-run plant identification services at the Botanical Resource Centre require regular evaluation to monitor visitor expectations and increase usage.

What we are going to do

Policies

- 4.3.1 The Friends of the Australian National Botanic Gardens may carry on its activities in, and in relation to, the ANBG in accordance with an agreement between the Director and the Friends.
- 4.3.2 The ANBG will maintain and manage a volunteer program to cater for members of the community who wish to participate in a range of volunteer roles at the ANBG.
- 4.3.3 Volunteers will conduct activities in accordance with the Director of National Parks' Volunteer Policy.

Actions

- 4.3.4 Provide facilities and assistance, including an office and lounge space, to support the work of the Friends.
- 4.3.5 Develop and regularly review a memorandum of understanding between the Director of National Parks and the Friends to authorise and detail the working arrangements for the Friends' activities.
- 4.3.6 Provide the Friends with free parking at the ANBG, free hire of facilities for Friends-related activities, and concession rates to members for hiring facilities.
- 4.3.7 Provide links on the ANBG website to the Friends website to promote Friends' activities.
- 4.3.8 Develop and implement strategies, in collaboration with the Friends, to increase the use and effectiveness of Friends-supported projects and services such as the Botanical Resource Centre (see Section 6.5, Plant identification and information services).
- 4.3.9 Develop and implement strategies, in collaboration with the Friends, to engage youth and young adults in the ANBG's recreational and educational aspects.

4.4 Marketing the ANBG

Background

While the work of the ANBG, including CANBR, has contributed to significant advances in Australian native plant horticulture, taxonomy, systematics and biodiversity informatics, its status as a national institution has declined over time. Marketing has focused on local advertising and promotion, with some visitor research. There is a significantly larger role to be played to increase national awareness of the ANBG's contribution and significance to the wider Australian community and to raise awareness among policy and political decision-makers.

The ANBG's target markets are diverse and reflect the multidisciplinary nature of the institution and the relevance of its work to society. Key target markets include all levels of government, the general public: locally and nationally, the international scientific community, education providers, the tourism industry, corporate and industry markets and non-government organisations.

The ANBG is a significant tourist destination in Canberra, currently attracting 450,000 visitors annually. Thirty-five per cent of visitors are from interstate or overseas. The Director, through the ANBG, will work closely with tourism partners to further develop the ANBG as a premier tourism destination in Canberra. A variety of initiatives are being considered to attract more visitors and tour groups.

Aim

- The ANBG is strategically positioned to enhance its profile as a national institution, increase awareness of its relevance and value to Australian society and to broaden its on-site and online audience.

Issues

- There is a need to develop a strong, consistent ANBG brand which supports successful marketing opportunities.
- Developing an enhanced profile will require specific expertise and ongoing resources.
- The ANBG needs to build upon its status as a national institution and consistently attract visitors throughout the year.
- There is a need to improve understanding among key stakeholders of the science partnership between the ANBG and CSIRO in CANBR and the relationship of CANBR to the ANBG.
- There are opportunities to promote the ANBG through the use of innovative online communications, social media and multimedia technologies.
- There is a need to promote and improve public access to the ANBG including via pedestrian and cycle paths.
- Public programs and guided walks provided by the Friends would benefit from greater promotion.

What we are going to do

Policies

- 4.4.1 Marketing will include, but not be limited to, brand management, research, advertising, public relations and promotional activities through various media tools.
- 4.4.2 Cooperative marketing with the tourism industry and industry partners, including other national institutions and the ACT Government, will be used to promote the ANBG to local, national and international audiences.

Actions

- 4.4.3 Develop and implement a strong ANBG brand identity and style guide.
- 4.4.4 Develop and implement a communications strategy that is reviewed every three years.
- 4.4.5 Develop and implement a marketing plan, including marketing messages, objectives and strategies.

- 4.4.6 Develop an annual media plan that provides opportunities to proactively engage with local and national media outlets.
- 4.4.7 Utilise social media, online and multimedia communications tools, assess and use emerging technologies and respond to social communication trends.
- 4.4.8 Actively foster partnerships that enhance the ANBG's profile and brand.
- 4.4.9 Undertake market research, visitor surveys and monitoring, including on-site and online visitor numbers and use patterns, visitor demographics and satisfaction levels.
- 4.4.10 Collaborate with the tourism industry to examine potential tourism opportunities and develop strategies and tour packages.
- 4.4.11 In consultation with the ACT Government and neighbouring institutions, investigate opportunities for improved access to the ANBG by public transport, pedestrian and cycle paths.
- 4.4.12 Prepare and implement a signage manual to achieve consistency in the style of interpretive and orientation signs.
- 4.4.13 Improve promotion of the ANBG's public programs including guided walks provided by the Friends.

4.5 Interpretation

Background

The ANBG is a primary custodian of the national story of the plants in Australia's cultural and natural heritage. Interpreting the living collection can enrich visitor experiences, encourage visitors to value Australia's unique flora and enhance understanding of the valuable work undertaken by the ANBG in building knowledge about Australian plants.

The ANBG uses a range of interpretive approaches to help visitors connect with plants and with its research and conservation work. Interpretive signage, publications and exhibitions (see Section 4.1, Public programs) are supported by daily free guided tours by the Friends of the Australian National Botanic Gardens. Tours are also available for groups (see Section 4.3, Friends of the Australian National Botanic Gardens and volunteers).

Aims

- To connect visitors with plants and to achieve the goals of the ANBG using a variety of interpretation approaches.
- People of all ages and backgrounds are encouraged to learn about and value Australian plants.
- Community awareness is raised about plant conservation and environmental sustainability issues and the ANBG's work in finding solutions (see Section 2.1, Conservation and horticulture).

Issues

- Effective interpretation of the ANBG's collections and work requires skilled staff with relevant expertise.
- The right balance needs to be struck between the level of signage and aesthetic values.

What we are going to do

Policies

- 4.5.1 Interpretation of the ANBG's collections and work will focus on key themes that complement the vision, mission and goals of the ANBG.
- 4.5.2 Interpretive information about the plants and related stories will continue to be strategically placed throughout the gardens and regularly reviewed and updated as appropriate.

Actions

- 4.5.3 Develop a schedule for interpretation and priority messages (see Action 4.4.5). Key projects to tell stories of Australia's unique flora and landscapes include:
- developing display panels to interpret eucalypt species
 - developing downloadable self-guided tours (podcasts)
 - interpreting major new gardens (e.g. the Red Centre Garden)
 - interpreting the rare and threatened collections
 - update the bush plant trail to interpret the indigenous use of Australian plants.
- 4.5.4 Install environmental monitoring stations as part of microclimate interpretation.
- 4.5.5 In collaboration with the Friends of the Australian National Botanic Gardens, continue to provide free guided walks and investigate developing a wide range of visitor experiences (see Sections 8.2, Revenue and financial management, and 4.3, Friends of the Australian National Botanic Gardens and volunteers).



The Australian National Herbarium collection comprises almost 1.2 million specimens and plays an important role in the ANBG's research programs

Photo: Carl Davies, CSIRO

Biodiversity science, knowledge management and use

Goal 5: Increase knowledge of Australian flora through outstanding research activities

Direction setting

Conducting scientific and horticultural research is one of the ANBG's key roles. The knowledge resulting from this research supports national efforts to ensure Australia's biodiversity is healthy and resilient in the face of threatening processes such as climate change, landscape degradation and invasive pests and diseases. The ANBG contributes to improved public understanding and appreciation of the value of Australia's plant heritage, particularly in terms of climate change mitigation and adaptation, and knowledge of Australia's biodiversity. Research can support both the commercial horticultural industry and recreational horticulture, thus contributing to Australia's economic and social development.

The ANBG's work in horticulture and the plant sciences will be strengthened through greater collaboration to further support the ANBG's contribution to knowledge about Australia's flora and associated ecosystems. In particular, work will focus on biodiversity conservation, restoration ecology and cross-cutting issues like climate change.

Taxonomy, systematics and other associated research on Australian and related plants and ecosystems, combined with horticultural and increasing seed biodiversity research, will be of ongoing value in supporting critical decision-making on complex biodiversity conservation issues. It will help in understanding the impacts of environmental change and provide insights into managing plants at risk from these impacts. In the coming years, the ANBG will continue to develop and refine its role as the primary node for knowledge about Australian plants.

Achievement of this goal will be supported by strong partnerships and result in a greater knowledge base upon which to make informed decisions about species and habitat recovery, as well as the appropriate use of Australian plants, ecosystem conservation and biological collections.

Performance indicators

The following indicators will be used to measure performance in meeting Goal 5:

- Number and value of collaborative projects undertaken with government and non-government bodies.
- Number and proportion of annual publications attributed to and/or acknowledging the ANBG that appear in refereed journals.
- Number of ANBG publications and databases published and made available on the internet.
- Number of enquiries received by the ANBG relating to horticulture and Australian flora.

- Outcomes of research projects in terms of threatened species restoration and seed biology conservation.
- Compliance with recognised curation standards.
- Degree of representation of Australia’s flora and fungi in the herbarium collection.
- External recognition of ANBG’s role in biodiversity science through requests for information, scientists wishing to collaborate in research and demand for plant material.
- Achievement of project outcomes including, but not limited to, Australian Plant Census, Australia’s Virtual Herbarium and internet-based identification keys.

5.1 Centre for Australian National Biodiversity Research (CANBR)

Background

The majority of scientific work at the ANBG has been undertaken through the Centre for Australian National Biodiversity Research (formerly known as the Centre for Plant Biodiversity Research). The centre was formed in November 1993 as a joint venture between the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Director of National Parks to be a national centre of research excellence in plant systematics and conservation biology. CANBR brings together staff, herbarium collections, research programs, databases and networks of the ANBG and CSIRO, to provide a node for knowledge about Australian plants for the Australian Government.

CANBR’s major function is to document the biological diversity of the Australian environment through establishing the taxonomic identity and relationships of native plants, their geographic distribution and ecological relationships, thereby informing conservation biology work. Biodiversity informatics improves management, presentation, exploration and analysis of taxonomic data and ensures that knowledge about Australian and related plants is integrated and readily accessible to support research and other applications (see also Section 6.1, Biodiversity informatics).

Aim

- In partnership with CSIRO, the Centre for Australian National Biodiversity Research is successfully managed and recognised as a national centre of research excellence contributing and disseminating knowledge on Australian and related plants and informing the conservation and sustainable management and use of Australian flora and fungi.

Issues

- There is a need to build greater institutional capacity and develop succession planning for scientific research and associated technical expertise.
- Scientific research needs to be strengthened through acquisition of new and additional resources and partnerships.

- There is a growing focus in CANBR on broader biodiversity issues based on its primary emphasis on plant science.

What we are going to do

Policies

- 5.1.1 The ANBG and its staff will actively participate in CANBR in accordance with the agreement between CSIRO and the Director of National Parks.
- 5.1.2 An ANBG–CANBR agreed research strategy will be developed that will guide research priorities and be reviewed at least annually.
- 5.1.3 The ANBG and CANBR will establish further collaborations with universities and other scientific institutions to enhance opportunities for graduate students to undertake research at the ANBG.

Actions

- 5.1.4 Implement the CANBR Agreement, including allocating relevant senior ANBG staff to be part of CANBR management decision-making.
- 5.1.5 In partnership with CSIRO, develop and implement a research strategy and business plan that addresses research priorities, succession planning, partnerships and strategies for securing additional funding.
- 5.1.6 Continue to work in partnership with CSIRO, through CANBR, to develop accessible baseline taxonomic data to support climate change research in Australia.

5.2 Plant systematics, biogeography and evolutionary research

Background

The role of CANBR's systematics and evolution program is to determine the botanical diversity, distribution, inter-relationships and genetic systems of Australian flora. Through this work, CANBR aims to contribute to basic and applied systematics research, botanical teaching, conservation and the maintenance of plant diversity. CANBR aspires to produce tangible and acknowledged results which contribute to improved management programs for Australia's ecosystems. The foundation of CANBR's work is the morphological documentation of the Australian flora and fundamental plant taxonomy. This is enhanced through application of modern molecular techniques investigating the genetic diversity and phylogenetic relationships of targeted groups of Australian flora. This work will provide critical information for conservation and other applications into the future.

CANBR has a strong international reputation for excellent scientific research, particularly in the fields of systematics and botanical information management. It continues to build on these research programs and capitalise through a diverse range of collaborations and partnerships.

Aim

- Significant contributions are made through CANBR to a greater understanding and knowledge of the systematics, taxonomy, biogeography and evolutionary origins and distribution of major groups of Australian flora and their relatives, fungi and lichens and the broader ecological role these play.

Issues

- There is a need to build greater institutional capacity in taxonomy and systematics and develop succession planning for scientific research and associated technical expertise.
- Systematics research needs to be strengthened through acquisition of new and additional resources and partnerships.
- The scientific research undertaken at the ANBG, through CANBR, can help raise ANBG's profile, both nationally and within the Australian Government.

What we are going to do

Policies

- 5.2.1 Research undertaken by the ANBG, through CANBR, will continue to contribute to knowledge of the morphology, taxonomy, systematics, evolutionary biology and conservation of the Australian and related floras, fungi and lichens and the increased understanding of their broader ecological roles.
- 5.2.2 Research may involve the collection, management and study of plant specimens from all regions of Australia and Australian territories. Collections and research activity may extend beyond Australia and its territories to elucidate the origins and relationships of Australian plants. Areas of known or suspected botanical significance, or with high numbers of threatened taxa, will continue to be of high research and collecting priority.
- 5.2.3 Mutually productive collaborative research programs and projects will be maintained and developed with national and international institutions and individuals.
- 5.2.4 Research will be published and promoted in accordance with the CANBR Agreement.

Actions

- 5.2.5 Implement strategies to maintain and build a core group of researchers and technical support engaged in pure and applied science to increase understanding of the taxonomy and systematics of Australian and related plants and fungi, making use of the Australian National Herbarium collection, the laboratories, the living collection and field studies.
- 5.2.6 Initiate and participate in field studies that concentrate on areas known to be under-surveyed botanically, areas with a problematic flora, and known and expected localities for rare or threatened plant taxa.
- 5.2.7 Disseminate research knowledge through a diverse range of academic and non-academic media according to agreed guidelines.

- 5.2.8 Develop and implement a program, taking a partnership approach, to communicate about science research and raise awareness of the ANBG's role.
- 5.2.9 Continue to contribute Australian National Herbarium data to the Atlas of Living Australia and Global Biodiversity Information Facility (GBIF) to provide foundation data to better understand the biogeography of climate change.

5.3 Development, management and curation of the herbarium collection

Background

The Australian National Herbarium (ANH) plays an important role in identifying and classifying the flora of Australian and neighbouring regions. The ANH collection holds the world's most comprehensive sample of Australia's plant biodiversity. At the time of preparing this plan, the ANH houses around 1.4 million specimens, including over 8,000 type specimens.

The ANH is managed through the Centre for Australian National Biodiversity Research. The herbarium collections of the ANH are archivally maintained at two sites, one in Canberra and one at the Australian Tropical Herbarium in Cairns. In Canberra, the collection is split between the angiosperms located on the CSIRO site and the gymnosperms and cryptogams located on the ANBG site. The specimen collections play an important role in CANBR's research projects and represent an invaluable historical record of the Australasian flora.

The ANH has specialist collections of international importance including:

- the world's most comprehensive collection of eucalypts
- an extensive collection of the flora of northern Australia and Papua New Guinea
- Australia's largest collection of mosses, liverworts and hornworts from across Australia and Papua New Guinea
- Australia's largest collection of lichens from across Australia and Papua New Guinea
- a specialist tropical rainforest collection of 130,000 specimens housed in the Australian Tropical Herbarium in Cairns, Queensland
- comprehensive collections of Melaleuca, Orchidaceae, Sapindaceae, Lauraceae, Portulacaceae and some sections of Poaceae, Rutaceae, Proteaceae, and Fabaceae.

The ANH houses vouchers for the ANBG living collection and the Australian Plant Image Index, and holds historical collections of national and international heritage value. The existence of properly vouchered and curated herbarium specimens is critical to maintain the scientific integrity of living plants at the ANBG and for their use in research (e.g. for the extraction of DNA). Specimens representing 'standards' for Australian Cultivar Registration Authority Incorporated (ACRA) registered cultivars and Plant Breeders Rights are also part of the collection (see Section 7.1, National and international roles).

The ANH provides an extensive source of scientific data for plant systematics research and supports research on the conservation and utilisation of Australian flora. It also provides information and identification services.

Collaborative projects will continue to form an important part of the ANH work to build research capability and contribute to a national knowledge base about Australian and related plants that supports environmental decision-making and science. Building and managing the collections, facilitating the loans and exchange program, and dataset development and maintenance are core functions of the ANH.

Aims

- The ANH is maintained to high curatorial standards.
- The taxonomically and geographically representative scientific collection of preserved samples of Australian and related floras is further developed.
- Nationally important botanical datasets are maintained and developed to support research on Australian and related floras.
- The ANBG is a valued contributor to national and international data management partnerships and the development of relevant standards.

Issues

- Expansion of the ANH collection and the integration of the cryptogam and angiosperm collections is constrained by space limitations.
- Maintaining archival conditions can be challenged by such issues as temperature and humidity fluctuations.
- There is a need to increase support for information technology (IT) development and maintenance of existing IT facilities.
- There is a need to increase capability at the technical and research levels, in such areas as spatial information systems and curation, to support the aims of the ANH.
- Creating career succession opportunities for research and technical staff would strengthen the capability of the ANH.
- The expansion of the cryptogam collection and research program will require additional technical and research resources.

What we are going to do

Policies

- 5.3.1 The broad representation of Australian and related floras in the ANH, both taxonomically and geographically, will be maintained and developed. The collections will concentrate on all major plant groups except algae and microfungi, with the taxonomic focus being vascular plants and non-vascular plants, macrofungi and lichens.
- 5.3.2 The herbarium collection will be maintained to high archival standards, in secure environmentally controlled buildings, and curated to contemporary taxonomic standards.
- 5.3.3 ANH data will be managed in accordance with national and international standards for the collection of botanical information.

- 5.3.4 The ANH will house and maintain voucher specimens of plants from the ANBG living collection including seed collections, plants photographed for the Australian Plant Image Index (APII) and other botanical research and survey projects.
- 5.3.5 The ANH will provide scientific authority, including reliable and verifiable scientific names, for the ANBG living collection including the seed bank and the APII.
- 5.3.6 The ANH will continue to participate in an active specimen loans and exchange program with recognised herbaria throughout Australia and internationally for the purposes of scientific research. Specimen loans will be made in accordance with the ANH Loans and Exchange Policy. Loans and exchanges of specimens will only be made with approved institutions registered under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and within provisions of CITES and relevant Australian legislation.
- 5.3.7 The ANH will provide a plant enquiry and identification service. Charges may apply to this service for professional or commercial individuals or organisations. These charges will be reviewed periodically (see also Section 8.2, Revenue and financial management).
- 5.3.8 Specimen acquisition will be in accordance with the ANH Accession Policy.
- 5.3.9 Basic data from the collections and other resources of the ANH will be made freely available through Australia's Virtual Herbarium.
- 5.3.10 The ANH will continue active involvement with the Council of Heads of Australasian Herbaria Incorporated (CHAH) to increase cooperation and understanding between herbaria.
- 5.3.11 The ANH will maintain its national focus for its work and collaborations.

Actions

- 5.3.12 Investigate options with CSIRO for increasing the space and improving the housing of the herbarium collection and negotiate support for its expansion (see Section 9.1, Capital works and infrastructure).
- 5.3.13 Continue to implement and maintain high curatorial standards for the specimens in the care of the ANH.
- 5.3.14 Continue to maintain and develop nationally significant botanical datasets, especially the Australian Plant Name Index and Australian Plant Census, in collaboration with other CHAH members.
- 5.3.15 Regularly review, and implement as required, the Disaster Management and Recovery Plan and monitor major advances in recovery operations.
- 5.3.16 Continue to implement an active field collection program with a focus on collecting taxa under-represented in the collections, taxa of research interest, and taxa from areas that are poorly known botanically.
- 5.3.17 Develop the collections and use data and information from the collections to support and maximise use of the resource for research.
- 5.3.18 Enhance accessibility to biological collections through collaborations.
- 5.3.19 Undertake herbarium outreach programs to assist delivery of taxonomic information for the professional and general communities.

5.4 Horticultural science

Background

The ANBG's horticultural science research focuses on the conservation of Australian plants. Priority is placed on threatened species listed under the EPBC Act, species with little known horticultural information, and research that will contribute to knowledge, improving both conservation and restoration outcomes from seed banking to protect against further loss of Australia's biodiversity. The ANBG is a living laboratory trialling new species in cultivation. The knowledge gained will enhance recreational and amenity horticulture.

Strengthening horticultural science research, in collaboration with other research institutions, government departments, botanic gardens, conservation agencies and community groups, will enhance the ANBG's ability to curate its living collection, inform horticultural practices and support integrated approaches to conservation through evidence-based research. Horticultural science research outcomes are used by the nursery and floriculture industries, conservation agencies, community groups and individuals and will therefore continue to contribute to Australia's economic and social development.

Aims

- Horticultural science research is focused on practical outcomes.
- Knowledge about the horticulture of Australian plants and their sustainable use is enhanced through public access to research results.
- Australia's capacity to undertake restoration activities for biologically diverse and resilient ecosystems is improved.
- The ANBG contributes to Australia's economic and social development and enriches recreational horticulture through access to new species and varieties of Australian native plants.

Issues

- There is a need to build greater institutional capacity for horticultural science research and the development and marketing of new cultivars.
- Horticultural research needs to be strengthened through acquisition of new and additional resources and partnerships.
- Better documentation of horticultural practices and research findings will help to retain and build corporate knowledge.
- The ANBG's horticultural science work needs promotion to raise the ANBG's profile, both nationally and within the Australian Government.
- There is a need for a mechanism to release successful new introductions into the horticultural trade with appropriate remuneration.

What we are going to do

Policies

- 5.4.1 Horticultural science research is a key role of the ANBG and will be guided by identified gaps in knowledge of Australian and related plants, and conservation priorities.
- 5.4.2 Collaborative programs and partnership projects will be maintained and developed with national and international institutions and individuals, to enhance horticultural science research and to support the ANBG's goals.
- 5.4.3 External funding will be actively pursued to support horticultural research and enhance research outcomes.
- 5.4.4 Horticultural corporate knowledge resulting from research and practice will be publicly documented and/or published.
- 5.4.5 The living collection, including the seed bank, may support horticultural science research.
- 5.4.6 Fieldwork may be undertaken to seek specimens of species new to horticultural trials.

Actions

- 5.4.7 Strengthen the horticultural science program to:
 - develop and support leading conservation biology and horticultural research
 - contribute to knowledge about the horticulture of Australian plants and their sustainable use
 - improve Australia's capacity to undertake restoration for biodiverse and resilient ecosystems.
- 5.4.8 Continue an active program of focused field collecting to enhance the living collection and seed bank to inform horticultural practices and support integrated approaches to conservation through research.
- 5.4.9 Trial propagation techniques to bring new species into cultivation.
- 5.4.10 Provide training workshops for staff to build capacity to document, promote and profile the ANBG's horticultural research and corporate knowledge.
- 5.4.11 Monitor the outcomes of the training workshops on horticultural knowledge documentation.
- 5.4.12 Provide horticultural technical advice and assistance to support local and national projects.
- 5.4.13 Develop and implement a strategy to build collaborations and partnerships, through leadership, with organisations with common horticultural and biodiversity conservation goals (e.g. the Australian Seed Bank Partnership).

5.5 Access to biological resources and benefit-sharing

Background

The ANBG living collection is a rich biological resource and requests for material are regularly received from client groups, including research and educational institutions, commercial enterprises and community groups. The Director recognises the framework of international obligations that relate to access to biological resources (and their associated genetic resources) and benefit-sharing, including the Convention on Biological Diversity (1992), the International Treaty on Plant Genetic Resources for Food and Agriculture (2001), and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (2010).

The Director, through the ANBG, participated in the development of Principles and Common Policy Guidelines on Access to Genetic Resources and Benefit-sharing for Participating Institutions (Cartagena, Colombia 2000).

Access to the ANBG's biological resources is managed in accordance with these international agreements, relevant legislation and the terms and conditions under which any biological resource material has been acquired by the ANBG. Where access to the ANBG's biological resources is sought for the purpose of research and development access must be in accordance with Part 8A of the EPBC Regulations, which gives effect to Australia's obligations in relation to access and benefit-sharing under the Convention on Biological Diversity.

Under Part 8A of the Regulations access requires a permit from the Minister and either permission from the access provider (for access for non-commercial purposes) or a benefit-sharing agreement with the access provider. The Director is the access provider in relation to the ANBG. The Minister may grant exemption from Part 8A in relation to biological resources that are being managed in a manner consistent with the purposes of Part 8A. In January 2007 the ANBG management arrangements for the transfer of biological resource material managed by the ANBG were exempted by the Minister from the requirements of Part 8A.

Access to biological resources is also covered by ss.354 and 354A of the EPBC Act if the resources are members of a native species and/or if access is for commercial purposes.

Aims

The living collection and other biological resources of the ANBG site are used for appropriate taxonomic, ecological and applied research, including at the genetic and molecular level.

Access to biological resources is consistent with the exemption under Part 8A of the EPBC Regulations (or otherwise in accordance with Part 8A); with conditions of exemption given under ss.303CC, 303CD and 303DD of the EPBC Act; with conditions of exemption under CITES Article VII (paragraph 6); and with Australia's international obligations and relevant legislation.

Benefits arising from the use of the ANBG's biological resources are shared equitably, including for the benefit of the environment.

Scientific information from research using the ANBG collections and other biological resources is used and/or published with appropriate recognition and acknowledgement of ANBG resources.

Issues

Building awareness of the value of the ANBG living collection and other biological resources could help to raise the ANBG's profile, both nationally and within the Australian Government.

There is a need to establish and maintain best practice protocols to facilitate access to the ANBG's biological resources in accordance with international obligations, relevant legislative requirements, and the terms and conditions under which any material is acquired from other agencies and organisations.

Biological resource material that the ANBG acquires needs to meet high standards of scientific integrity, as well as ethical and legal standards related to provenance (including prior informed consent and mutually agreed terms).

What we are going to do

Policies

- 5.5.1 The ANBG will encourage and facilitate access to its living collection and other biological resources for taxonomic, ecological and applied research at the genetic and molecular level, in a manner that is consistent with Australia's international obligations and relevant legislative requirements.
- 5.5.2 Fees may be charged for release of plant material in accordance with the Schedule of Charges (see also Section 8.2, Revenue and financial management).
- 5.5.3 Acquisition of biological resources for the ANBG collections will be on mutually agreed terms, with prior informed consent, and the material will be used in a manner consistent with the agreed terms.
- 5.5.4 The ANBG will not acquire biological resources from organisations or individuals that do not meet the requirements of the EPBC Act and Regulations (where applicable) and relevant international obligations.
- 5.5.5 Access will be given to biological resources in accordance with Part 8A of the EPBC Regulations, where applicable, including the conditions of any exemption from Part 8A, and in accordance with Australia's international obligations.
- 5.5.6 Visiting scientists, scientific associates, ex-staff and other professionals may be provided with access to the collections and facilities to undertake research, to study, and to collect plants for the living and herbarium collections.

Actions

- 5.5.7 Maintain best practice procedures to facilitate access to the living collection and other biological resources in accordance with international obligations and relevant legislative requirements.

- 5.5.8 Develop and/or adopt guidelines for assessing the provenance and scientific integrity of biological resource material to be accepted into the ANBG collections.
- 5.5.9 Develop, and make readily available, clear and transparent procedures consistent with relevant international obligations and legislative requirements for the provision of biological resources for research, including at the genetic and molecular level.
- 5.5.10 Develop agreements which require that the use of the ANBG collections and other biological resources from the site is recognised and acknowledged and that ANBG is kept informed of relevant publications, data and research activities.
- 5.5.11 Enter into benefit-sharing agreements where access to ANBG biological resources is for commercial purposes or potential commercial purposes.

5.6 Conservation biology

Background

Conservation biology studies are concerned with phenomena that affect the maintenance, loss and restoration of biodiversity, the science of sustaining evolutionary and ecological processes that engender diversity, and the conservation of species, habitats and ecosystems. The ANBG, together with CANBR, will continue to undertake scientific research to strengthen its contribution to conserving Australia's biodiversity (see Section 5.2, Plant systematics, biogeography and evolutionary research). This research will build on the ANBG's strengths in orchid research, rare and threatened species, alpine flora and seed banking and focus on issues integral to the maintenance of Australia's biodiversity, including climate change.

Collaborations and partnerships with government and non-government agencies, academic institutions and industry will continue to support and strengthen the ANBG's conservation biology research.

Aims

- Existing expertise is strengthened and developed to contribute to knowledge that informs the conservation and sustainable use of Australia's plant biodiversity and increases understanding of plant responses to environmental change.
- The ANBG develops and builds a strategic research program in biodiversity conservation, including research in seed biology.
- The ANBG and CANBR collaboratively develop a discrete program in restoration biology, building on resources and skills of both partners.

Issues

- There is a need to build greater institutional capacity for conservation research.
- The ANBG may be able to attract more partners and resources by better publicising outcomes of its conservation research.

What we are going to do

Policies

- 5.6.1 The ANBG will maintain and further develop a research focus on conservation biology to increase understanding of Australian plant species, habitats and ecosystems.
- 5.6.2 Partnerships and collaborations will be used to strengthen and build research expertise.
- 5.6.3 The ANBG's conservation biology research will focus on targeted ecologically endangered ecosystems of south-eastern Australia.
- 5.6.4 Additional external funding will be actively sought to support conservation biology studies.
- 5.6.5 The living collection, as well as the seed bank and the herbarium, will support conservation biology research.

Actions

- 5.6.6 Develop and implement a strategy to improve capacity to undertake conservation research and to enable succession planning. This may include establishing an external research advisory group, partnerships and collaborations, associated cooperative agreements and strategies for securing research funding.
- 5.6.7 Identify knowledge gaps and priorities for ecosystems, habitats and species where conservation research will effectively contribute to sustaining evolutionary and ecological processes of Australia's biodiversity.
- 5.6.8 Develop collaborative teams within the ANBG and CANBR and with external partners to build integrated research projects involving living collection, seed bank, horticulture, taxonomy and conservation biology expertise.
- 5.6.9 Revise the ANBG's conservation policy to reflect modern approaches to biodiversity conservation and to focus the conservation research program.
- 5.6.10 Build collaborative projects incorporating expertise and knowledge, enabling the ANBG to develop a role in research addressing conservation of genetic diversity and small populations.
- 5.6.11 Incorporate the seed biology research program into the ANBG's conservation biology activities through collaborative projects and early engagement.
- 5.6.12 Develop collaborations between the ANBG and the Australian Tree Seed Centre (ATSC) to build a program around native seed science research, specifically aimed at informing seed sourcing for revegetation.
- 5.6.13 Disseminate the outcomes of conservation biology research through a range of media according to agreed guidelines.
- 5.6.14 Use appropriate analytical and visual display tools to ensure results of research projects are accessible and adopted in areas of national significance, such as identification of key ecological refugia and conservation priority planning.

Goal 6: Be the gateway for knowledge about Australian plants

Direction setting

As a national scientific and educational institution, the ANBG is well placed to be a platform for showcasing and raising awareness of the important scientific and conservation work that is currently undertaken for the conservation and sustainable use of Australia's biodiversity. The ANBG will continue to ensure research-based knowledge about Australian plants is accessible at a local, national and international level. Ongoing enhancement of the ANBG's information technology capability and service level is essential to being a gateway for knowledge about Australian plants.

Database application development is also essential in making scientific and horticultural information accessible to a geographically diverse range of users. The Integrated Botanical Information System (IBIS) is a relational database that links the herbarium collection, the living collection, nomenclature and taxonomic systems, the photograph and digitised image collection and bibliographic material held in the library. The ANBG, together with CANBR, will continue to have responsibility for significant databases brought together or integrated within IBIS, including:

- Australian National Herbarium Specimen Information Register (ANHSIR)
- ANBG Living Collection Database
- Australian Plant Image Index (APII)
- Australian Plant Name Index (APNI)
- Australian Plant Census (APC).

The ANBG library covers taxonomy, botany and the horticulture of Australian native plants with a significant collection of international publications on cryptogams and orchids. The library services add value to the electronic database resources and support a range of researchers and other clients.

Engaging new clients with varying needs will rely on an ongoing commitment to develop and maintain the databases, website and library collection and services. Growing use by community members of electronic and particularly social media over future years is predicted to increase the need for the ANBG to enhance its electronic media.

Internet-based resources will be supported, according to demand, by other services including the library collection, a plant identification service, the Botanical Resource Centre, reference to published texts for public enquiries and, for specialised enquiries, reference to experts within and outside the ANBG.

The ANBG provides a unique and integrated opportunity to showcase the Australian Government's work on biodiversity conservation and sustainability. The ANBG will engage with audiences in innovative and creative ways to showcase the department's priority programs through the ANBG's regional and national networks. The ANBG will continue to host websites of environmental non-government organisations where appropriate, including the Australian Network for Plant Conservation (ANPC), Australian Systematic Botany

Society (ASBS), CHAH and CHABG. The ANBG's website will provide links to relevant botanical and environmental institutions.

Achievement of the goal to be the gateway for knowledge about Australian plants will result in partnerships that produce and draw together high quality comprehensive and current information and make it accessible to the Australian and international community to foster understanding, appreciation, sound conservation and appropriate use of Australia's flora.

Performance indicators

The following indicators will be used to measure performance in meeting Goal 6:

- Overall client satisfaction with the quality of information and services provided is 80 per cent or higher.
- Information technology used in the databasing and presentation of biological information meets national and international standards.
- There is an annual increase in the use of the ANBG website and associated databases.
- There is an increase in the percentage of known Australian native and naturalised plants represented in the image collection.
- There is an increase in the annual number of images supplied to the Australian Government and state and territory government agencies.
- There is an increase in the annual number of horticultural enquiries received.
- There is an increase in the number and demographic range of users of the Botanical Resource Centre, Australian Plant Image Index and the plant identification service.

6.1 Biodiversity informatics

Background

The ANBG's work in biodiversity informatics builds on the strong foundation, created through CANBR, of taxonomic, horticultural, biogeographic and evolutionary information stored in digital form and applies computer information technology techniques to improve data management, presentation, exploration and analysis. The Integrated Botanical Information System (IBIS) operating environment provides the infrastructure, applications and services supporting biodiversity informatics for the ANBG, CANBR and other partners. IBIS incorporates systems for the integration, retrieval and dissemination of biodiversity information, collections management, digital asset management, nomenclatural and taxonomic indexes, information delivery, internet services and national database support. IBIS staff design and manage database applications to cover operational and information management needs of staff at the ANBG and CANBR, including database applications necessary for the Australian National Herbarium. Because IBIS needs to service two key stakeholders, the department and CSIRO, and deliver internationally, its hardware, software and operating platforms may not necessarily conform to those adopted by outsourced computing service providers of either stakeholder. A level of independence is required to perform its specialist role effectively.

While IBIS' biodiversity informatics work directly supports the ANBG and CANBR, it also makes a significant contribution to national and international biodiversity related database application development and processes. Consequently, IBIS has formed important partnerships with other national and international botanical institutions.

Aims

- Nationally recognised and accessible botanical datasets are enhanced and managed to international standards.
- High quality client services contribute to national and international data management partnerships.
- The ANBG is the central authoritative and accessible point for information about Australian plants for government and non-government agencies, academic institutions, industry and the wider community.

Issues

- Information technology infrastructure needs to remain current, to meet national and international standards of database management.
- Enhanced capability in biodiversity informatics and spatial information systems is necessary to reduce vulnerability in business continuity planning, and this requires funding certainty.
- There is a need to build greater institutional capacity and develop succession planning for biodiversity informatics activities.

What we are going to do

Policies

- 6.1.1 Contemporary information management technology will be employed to provide efficient tools for the management and dissemination of biodiversity information for use by the community, researchers and government.
- 6.1.2 Under part of the CANBR Agreement, the ANBG and CANBR will be jointly responsible for, or for contributing to, the coordination, maintenance and updating of important national botanic databases developed by the ANBG, other relevant departmental programs and CSIRO.
- 6.1.3 Best practice in design and implementation of national and international standards for biodiversity data exchange will be employed (see Section 5.3, Development, management and curation of the herbarium collection).
- 6.1.4 A staff intranet will be maintained to enhance communication among staff at various locations.

Actions

- 6.1.5 Maintain and upgrade, as appropriate, a high quality electronic communications and information delivery network to support business requirements through investigating new developments in scientific automation and communication and installing appropriate computer hardware, software and information systems.
- 6.1.6 Continue to develop, maintain and upgrade databases to current technological standards to support the scientific collections and research programs.
- 6.1.7 Provide a user-friendly and accessible online interface for relevant databases to enable access by a broad range of users, including the general public.
- 6.1.8 Continue to provide authoritative expertise in national and international biodiversity informatics projects and collaborations.
- 6.1.9 Participate in discussions and working groups and provide high level input to national and international initiatives on international standards and protocols for botanical data exchange to reflect the needs of the botanical community (see Section 7.1, National and international roles).
- 6.1.10 Develop and implement succession planning for the biodiversity informatics program to enhance its capability and reduce the risk of loss of continuity or outputs.
- 6.1.11 Monitor database use to determine trends and patterns and to improve accessibility to a broader audience.
- 6.1.12 Undertake periodic satisfaction surveys.

6.2 The ANBG on the internet

Background

The ANBG and CANBR employ state-of-the-art computing hardware to provide efficient internet access.

Internet servers provide access to textual and graphic information about the ANBG and CANBR and information from various databases. The internet also provides connections to information published online by other botanical and environmental institutions. The internet is the primary vehicle for access to collaborative projects such as Australia's Virtual Herbarium.

The ANBG and CANBR websites continue to be important tools for engaging new clients. The ANBG will embrace new opportunities in marketing and communications, including social networking, to provide botanical information, harness public support and gain feedback.

Aims

- The ANBG website demonstrates maximum creativity, innovation, currency and accuracy; disseminates information on Australian plants to a national and international audience; and engages public interest in the ANBG's work.
- The ANBG's website is nationally and internationally recognised as a gateway for information on Australia's plants.

Issues

- Maintaining a modern website that meets user expectations requires specialist skills and ongoing resources.
- Raising the ANBG's internet profile and using social media may result in more enquiries and require additional resources.

What we are going to do

Policies

- 6.2.1 Access to the internet for the delivery and retrieval of data and information will be a cornerstone of the information processing infrastructure of the ANBG and CANBR.
- 6.2.2 The ANBG website will conform to or exceed the relevant government requirements for accessibility.

Actions

- 6.2.3 Provide and manage a website to encourage a wider national and international community to take an interest in Australian plants, the ANBG and its aims and activities.
- 6.2.4 Prepare or commission botanical information resources specifically for internet delivery.
- 6.2.5 Provide links from the ANBG website to other websites which have Australian plants or botany as their primary focus and to other sites relevant to the ANBG's scientific role.
- 6.2.6 Develop and maintain the ANBG website in accordance with Australian Government strategies and standards for information management and communication technology.
- 6.2.7 Host websites of relevant and approved environmental non-government organisations.
- 6.2.8 Utilise current website design and access principles to ensure the ANBG website continues to reflect a nationally significant scientific and educational institution and tourism destination.
- 6.2.9 Manage and enhance computing facilities that enable the application of current and developing technology and ensure continuity of internet service availability.
- 6.2.10 Manage and enhance an accurate and responsive integrated database of biodiversity information and provide accessible information to the community, researchers and government.
- 6.2.11 Manage and enhance websites to include new and developing technology and design practices.
- 6.2.12 Develop a presence on social networking websites to encourage public interaction and feedback.
- 6.2.13 Monitor website performance to determine compliance with accessibility standards, usage rates, diversity of users, points of access and other relevant statistical data.

6.3 The ANBG library and archives

Background

The ANBG library and archives is a comprehensive botanical and horticultural library with a significant archival role in preserving the records of a national institution for future generations. Many items in the collection are unique or of limited availability in Australia and consequently the collection has national significance. The collection has significantly developed over the past 40 years and material has been acquired by purchase, exchange, gift and donation. The library collections include books, journals, artwork, maps and multimedia materials and the library of the Australian Biological Resources Study (ABRS) which is held as a discrete collection. Also held in the library is a collection of rare books and special editions. Some of the collection materials are fragile and require a controlled environment.

The ANBG's archival role includes preserving the records and history of the institution from its earliest days to the present. This includes preserving some objects of historical interest, together with samples demonstrating how archival techniques and activities change over time. Photographs illustrating the ANBG's history are managed in conjunction with the ANBG image collection.

The library resources and services are an integral part of the ANBG and support the specialist work of ANBG and CANBR staff and volunteers. The library provides services to other botanical and research institutions, visiting researchers and members of the public. Networks for loans and exchange of information operate with the CSIRO Black Mountain Library, libraries of other major Australian botanic gardens and through membership of the Council on Botanical and Horticultural Libraries and the Environment Librarians Network.

At the time of preparing this plan the library is managed as a branch of the department's library and shares its catalogue, which is accessible through the internet.

Aims

- The library provides timely and high quality information services and resources that support the ANBG's mission.
- The library and archive collections are developed, maintained and preserved in response to their ongoing use and significance.
- Records and historical material related to the ANBG's development are collected and appropriately archived.

Issues

- There is a need to acknowledge the unique roles, responsibilities and requirements of the ANBG library as a division of the department's library.
- The security of the ANBG art collections could be enhanced through consolidation of their management and implementation of a consistent approach to cataloguing items in each collection.

- The ANBG library services the needs of ANBG volunteer staff, equal in number to the paid staff, and this is not always recognised when allocating resources.
- The ANBG library collection is reaching current storage capacity and a larger on-site facility will be required to house the collection.
- A fire-proof facility is needed to secure the rare books and prints in the collection.

What we are going to do

Policies

- 6.3.1 Management of the ANBG library and archives will be consistent, so far as possible, with management of the department's central library.
- 6.3.2 The collections and archives will be catalogued in accordance with national standards.
- 6.3.3 The library and archives will be maintained and managed at the ANBG site, with the collection reflecting the thematic focus of the living and herbarium collections, the conservation and horticulture of Australian and associated plants, and education about biodiversity and the Australian environment.
- 6.3.4 Library services will be available to ANBG and CANBR staff and volunteers, as well as associates including visiting researchers, student interns and the Friends of the Australian National Botanic Gardens. Arrangements by appointment may be made to provide access for others such as researchers, students, staff from related institutions and the general public.
- 6.3.5 The ANBG library and archives will support networks for loans and exchange of information with the CSIRO Black Mountain Library, with libraries of other major botanic gardens, through membership of the Council on Botanical and Horticultural Libraries and the Environment Librarians Network and via Libraries Australia.
- 6.3.6 The ANBG library acquisitions policy will be influenced by the holdings of closely located and similar scientific libraries such as CSIRO Black Mountain library and ANU Life Sciences library.
- 6.3.7 Rehousing the library collections and broadening their user base will be considered as part of any visitor services and/or administration redevelopment at the ANBG.
- 6.3.8 Lending restrictions may be placed on certain categories of library material and library clients, as appropriate. For example, the archive collection, artworks and rare books are not available for general loan. Special loan arrangements can be made for use in appropriate exhibitions.

Actions

Access to the library and library services

- 6.3.9 Build and maintain an appropriate collection of books, journals, maps, artwork and databases that supports the scientific, horticultural and educational roles of the ANBG and CANBR.
- 6.3.10 Manage, enhance and maintain library resources on the internet.

- 6.3.11 Review the role of the ANBG library and consider possible options for increasing the space available to house the library and archive collections.

Library services

- 6.3.12 Provide library services to clients in a timely and efficient manner and promote the library collections and services.
- 6.3.13 Negotiate an agreement with CSIRO, through CANBR, to improve cooperation between the CSIRO Black Mountain Library services and the ANBG library.
- 6.3.14 Enhance, maintain and utilise electronic information systems to improve library services.
- 6.3.15 Enhance, maintain and utilise cooperative links with other institutions.
- 6.3.16 Encourage researchers to study the ANBG's history by providing access to archival documents.
- 6.3.17 Make placements available in the library for participants in the ANBG volunteer program.

Collection management

- 6.3.18 Register, catalogue, preserve and maintain selected printed material and objects relevant to the ANBG's history as a permanent archive.
- 6.3.19 Enhance the library collection through active collection and acquisition of new and historical material.
- 6.3.20 House the collections to ensure material is readily available for clients while also being preserved in optimal conditions, including adequate space provisions.
- 6.3.21 Periodically assess the condition of the collection and adapt or implement additional conservation measures as required.
- 6.3.22 Review the Disaster Management and Recovery Plan annually, and implement the plan in conjunction with the Australian National Herbarium as appropriate.
- 6.3.23 Assess the cataloguing methodology for the ANBG art collections and consolidate the collections and their records in accordance with national cataloguing and archiving standards.

6.4 The ANBG image collection

Background

The ANBG image collection is managed through CANBR. The Australian Plant Image Index (APII), which is the largest component of the collection, has grown into a valuable national and international resource. It supports the promotion and building of knowledge about Australia's diverse flora and ecosystems, including Australian cultivars. The ANBG image collection is also valued for its pictorial history of the ANBG's development. The collection includes born-digital images (that is, images that originated in a digital form), digitised images (from scanned 35 millimetre transparencies), 35 millimetre transparencies, line art, botanical illustrations and other media. The internet continues to be the main way of publicising the scope of the collection

to prospective users. Low-resolution images and associated descriptions are being made available online.

Donations and bequests to the collection may be accepted. Donations of images to the APII may be eligible for concessions under the Commonwealth's Cultural Gifts Program, providing tax incentives to donors.

Aims

- The Australian Plant Image Index is maintained under appropriate conditions and remains accessible in the future to support national and international plant focused scientific and horticultural research.
- A collection of images is accessible that includes examples of every Australian native and naturalised plant species and representative images of their habitats, to promote Australia's flora and the conservation of Australia's biodiversity and cultural values.
- A pictorial history of the ANBG is developed and maintained.
- The ANBG is recognised as the central authoritative and accessible point for images of Australian flora.

Issues

- Managing incoming born-digital images and processing the backlog of 35 millimetre slides waiting to be digitised is resource intensive.
- The image collection would significantly benefit from using suitable volunteers to process and catalogue images, and through contributions to the collection from the community.
- The growing digital image collection will require additional data storage capacity.
- There are conflicts between the role of the collection as a scientific resource and its capacity to provide images for commercial use.

What we are going to do

Policies

- 6.4.1 Curation and enhancement of the image collection will be managed through CANBR.
- 6.4.2 Images will be stored under appropriate archival conditions for access, use, management and preservation.
- 6.4.3 Images associated with, and linked to, herbarium specimens in the Australian National Herbarium and the ANBG living collection will be given high priority for incorporation into the image collection.
- 6.4.4 Access to and use of images in the collection will be provided under appropriate copyright licensing arrangements which may include payment of licence fees, or charges under s.356A of the EPBC Act.
- 6.4.5 Licence fees, or statutory charges, will apply to access to and use of images for commercial purposes.

- 6.4.6 Volunteer staff may be used to support the development of the image collection.
- 6.4.7 Agreements may be developed with the holders of other image collections to enable reciprocal use of images.
- 6.4.8 Grants, sponsorship or monetary bequests may be used to support the curation and enhancement of the image collection.
- 6.4.9 Agreements may be made to manage botanical image collections for other state, territory or Australian Government agencies.

Actions

Collection management

- 6.4.10 Develop and maintain the Australian Plant Image Index (APII) using high curatorial standards, currently accepted nomenclature and optimum archival conditions.
- 6.4.11 Digitise physical media in the collection.
- 6.4.12 Research and establish optimal archival storage to secure and house physical media in the collection, in particular the extensive collection of 35 millimetre transparencies that no longer need to be accessed on a regular basis.
- 6.4.13 Implement the Disaster Management and Recovery Plan as required to secure the collection.

Promotion of the collection

- 6.4.14 Promote and encourage use of the collection by publishers from both the private and public sectors.
- 6.4.15 Display born-digital and digitised images on the ANBG website allowing national and international promotion of the collection.

Source images for the collection

- 6.4.16 Initiate a program to identify images required to enhance the ANBG online image collection.
- 6.4.17 Actively encourage the wider community to donate or bequeath reliably identified, high quality images to the collection. This will be done through promotional materials, direct approaches and awareness raising activities.
- 6.4.18 Promote the use of the Australian Government's Cultural Gifts Program and/or similar tax incentive schemes to encourage suitable donations to the collection and facilitate this process.
- 6.4.19 Investigate opportunities to enhance the collection from externally funded projects and implement where practicable.

Access to the collection

- 6.4.20 Administer access to the image collection under appropriate licensing arrangements to reproduce images and provide digital copies of transparencies or born-digital images for a diverse range of purposes.

- 6.4.21 Display images from the collection on the ANBG website as a means of publicising the collection and making it accessible to the public.
- 6.4.22 Integrate the image collection with other parts of the IBIS database providing links to images from other datasets.

Provision of services

- 6.4.23 Manage and provide relevant images and make them available to other organisations and agencies on a fee-for-service basis.

6.5 Plant identification and information services

Background

Professional botanical information services are provided by the ANBG to a range of clients. A plant identification service is provided through the Australian National Herbarium. A Public Reference Herbarium is located in the Botanical Resource Centre for 'do-it-yourself' identification and is managed by the ANBG, the Friends of the Australian National Botanic Gardens and the ANH. The Public Reference Herbarium is being developed to cover all native and introduced vascular plant taxa on the NSW South Coast and Southern Tablelands. Access to online resources and computer identification keys is available in the Botanical Resource Centre.

ANBG staff also assist with public horticultural enquiries through reference to published texts and, for specialised enquiries, referral to experts on staff and at collaborating organisations. The ANBG also provides training for volunteer facilitators to assist the public using the Botanical Resource Centre.

Aim

- Authoritative and accessible information services are provided to complement online services.

Issues

- Additional resources may be required if the horticultural advisory service attracts a broader audience or if community use of the Botanical Resource Centre increases.

What we are going to do

Policies

- 6.5.1 A plant enquiry and identification service will be provided through the ANH. Charges may apply for services provided to professional or commercial individuals or organisations (see also Section 8.2, Revenue and financial management).
- 6.5.2 Advice will be provided to government and other professional organisations, as appropriate, on such relevant matters as botanic gardens management and horticulture.

- 6.5.3 The Public Reference Herbarium will specialise in plants of the local region, and provide appropriate facilities and plant identification tools for users.

Actions

- 6.5.4 Provide timely and accurate information in response to horticultural and botanic gardens enquiries and requests for plant identification services.
- 6.5.5 Provide accurate horticultural information for effective online public access .
- 6.5.6 Evaluate the purpose, use and intended audiences for the Botanical Resource Centre, in conjunction with CANBR and the Friends of the Australian National Botanic Gardens, and develop and implement strategies to encourage greater use and public recognition.
- 6.5.7 Enhance the Public Reference Herbarium to fully represent the taxa of the NSW South Coast and Southern Tablelands and curate the collection using currently accepted plant names (see Section 5.3, Development, management and curation of the herbarium collection).



The ANBG works collaboratively with a range of agencies in conserving Australia's flora

Photo: Barry Brown

Stakeholders and partnerships

Goal 7: Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations

Direction setting

Recent years have seen the refinement of international instruments, such as the Convention on Biological Diversity, and greater national and international collaborations to strengthen biodiversity focused work. As an Australian Government institution the ANBG will continue to facilitate and collaborate in guiding national and international biodiversity policy and practice to strengthen Australia's conservation outcomes. In particular, the ANBG will focus on matters related to the work of botanical institutions in Australia and their role in research, development and provision of information about Australia's flora, supporting integrated conservation and adaptive management, and education and awareness raising about the value of biodiversity.

Achievement of this goal will see the ANBG fulfilling its role as a national institution by contributing to effective policies, protocols and standards that guide the important work of biodiversity knowledge management. It will also contribute to best practice policies to support the conservation of biodiversity and community well-being.

Performance indicator

The following indicator will be used to measure performance in meeting Goal 7:

- Number and significance of contributions made by the ANBG in national and international collaborations and forums.

7.1 National and international roles

Background

The ANBG participates in many collaborative projects, conferences and committees providing opportunities for liaison and discussion between botanic gardens and herbaria. Importantly, ANBG and CANBR staff have taken an active role in developing national and international standards for biodiversity data exchange through their involvement in such national projects as the Herbarium Information Systems Committee and Herbarium Information Standards and Protocols for Interchange of Data (HISPID). The ANBG through CANBR also continues to participate in international collaborations including Biodiversity Information Standards (formerly known as the Taxonomic Databases Working Group) and the Global Biodiversity Information Facility (GBIF). The ANBG has contributed through the Council of Heads of Australia's Botanic

Gardens (CHABG) to international discussions on the Global Strategy for Plant Conservation (Secretariat of the CBD undated).

As part of its national focus and its role in the development of, and access to, botanical, taxonomic and horticultural knowledge, the ANBG maintains the office of the Australian Cultivar Registration Authority Incorporated (ACRA). ACRA's key role is to register, in accordance with the International Code of Nomenclature for Cultivated Plants, names of cultivars of Australian native plants and to encourage the horticultural development of Australian flora. The majority of ACRA's work is undertaken by volunteers, including the clerical and record keeping side of cultivar registration, and mounting of herbarium specimens.

ACRA is guided by a committee of representatives from each of the major state and territory botanic gardens, the Society for Growing Australian Plants and the Nursery Industry Association of Australia. In addition, other members can be appointed to the committee who represent special interests or have expertise of value to ACRA.

The ANBG's ability to contribute to national and international policies and practices is largely due to the diverse skills and expertise of its staff. Staff are encouraged to participate in botanical societies and associations that are relevant to their work.

Aims

- The ANBG actively and constructively participates in national and international bodies and forums to discuss policy, practices, protocols and standards relevant to the full range of ANBG and CANBR activities.
- The ANBG is a national focus for, and plays a key role in, national biodiversity database management.
- The ANBG internationally represents and promotes Australia's efforts in botanical database management.

Issues

- The ANBG could be further recognised and valued for its contribution and involvement in national and international collaborations.
- Facilitating and collaborating in the development and implementation of national and international policies and practice requires suitable qualified staff and can be resource intensive.

What we are going to do

Policies

- 7.1.1 The ANBG will participate, as appropriate, in national and international working groups and meetings that directly support or benefit the work of the ANBG, including CANBR.

Actions

- 7.1.2 Actively participate in technical working groups for such organisations as the Secretariat of the CBD, Botanic Gardens Conservation International (BGCI), Biodiversity Information Standards, Global Biodiversity Information Facility (GBIF), Council of Heads of Australasian Herbaria Incorporated (CHAH) and Council of Heads of Australia's Botanic Gardens (CHABG).
- 7.1.3 Develop strategies for securing resources to support national and international biodiversity policy development and support.
- 7.1.4 Provide ACRA with reasonable facilities and assistance, including access to the facilities of the Australian National Herbarium.
- 7.1.5 Raise the profile of the Global Strategy for Plant Conservation (GSPC) in Australia and together with CHABG develop a monitoring framework to enable Australia to report on progress towards GSPC targets.
- 7.1.6 Identify opportunities to develop partnerships with non-government organisations that share similar objectives.



The ANBG's skilled staff work across a range of areas and their expertise helps to fulfil its mission, vision and goals

Photo: Vikky Wilkes

Business management

Goal 8: Grow as a national institution

Direction setting

As a botanic garden managed by the Australian Government through the Director of National Parks, and a national institution with a leadership role, the ANBG has a mandate to serve the nation, have a conscious national view and be a custodian of the national story of Australia's unique flora. Sustaining an institution focused on inspiring and connecting people to Australia's diverse botanical heritage is particularly dependent on the expertise and enthusiasm of staff and associates who share its vision, as well as best practice business operations and appropriate financial and staff resources.

In accordance with the APS Values applicable to members of the Australian Public Service, the ANBG will build on its expertise and strengthen its capacity through providing a work environment that values people, respects and encourages diversity, encourages a culture of professionalism and supports staff to achieve their full potential. Working with partner botanic and scientific institutions and other external stakeholders is an important part of the ANBG workplace culture and will continue to help the ANBG to fulfil its mission and to achieve its vision and goals. The successful collaboration of staff and volunteers, stakeholders and partners from various disciplines is based on mutual trust and respect, working together as equals, listening openly and sharing knowledge and skills. At the core of the ANBG's operations is a shared commitment to the appropriate management of the ANBG, connecting people to plants, and the conservation and sustainable use of Australia's biodiversity.

Management of the ANBG will continue to be guided by excellence in business practice. The ANBG will seek innovative and sustainable approaches that ensure an efficient and effective use of resources, making significant contributions to biodiversity conservation and influencing Australia's policy and practice through outstanding work in science, horticulture, education and botanic garden management. Providing opportunities for appropriate commercial operations and events will continue to enhance the visitor experience.

Managing the ANBG requires an ongoing commitment to ensuring a successful, safe and healthy workplace and visitor attraction. The maintenance and protection of ANBG values will continue to require security measures and an effective education and enforcement program.

Strengthening the ANBG's profile will become a greater part of the workplace culture. A cultural change associated with the implementation of this plan will see staff taking responsibility for marketing the ANBG and increased efforts to raise its profile using a variety of approaches and opportunities.

Achievement of this goal will result in the professional expertise and performance of ANBG staff being recognised and valued both nationally and internationally. The ANBG will make effective contributions to the conservation of Australia's natural and cultural heritage through best practice business management. Productive partnerships with the public and private sectors, as well as volunteers and local communities, will support the management of the ANBG.

Performance indicators

The following indicators will be used to measure performance in meeting Goal 8:

- Level of positive feedback from staff received through the departmental annual staff survey in relation to job satisfaction.
- Number of staff who have participated in professional skills development opportunities (formal and informal).
- Increase in proportion of overall budget that is derived from gifts, sponsorship, donations and in-kind contributions directly or indirectly to the ANBG.
- Increase in net return from commercial operations, fees and charges.
- Reduction in number and severity of health and safety incidents involving staff, volunteers and visitors.
- Reduction in the number of identified risks rated as moderate or above in the Risk Watch List.
- Adverse impacts from commercial activities on the values of the ANBG are minimised and rectified.
- Number of positive and constructive responses concerning the ANBG profile and brand received through visitor surveys and stakeholder feedback.
- Increased use of internet and social media technologies in marketing.

8.1 Staffing

Background

The work of the ANBG draws on a diverse range of disciplines and expertise. The ANBG has several work areas and its staff are spread across these work areas on both ANBG and CSIRO land. This presents challenges in maintaining effective communication and collaborative work practices.

Some staff roles are labour intensive, especially those in horticulture, and are likely to remain so. While efficiencies have been introduced, they have not made up for staff reductions during the life of the previous plan.

The volunteer program has facilitated significant community involvement in the operation of the ANBG. The ANBG, including CANBR, encourages use of the collections and facilities by staff from other organisations and by bona fide individuals who are studying Australian plants. The value of the collections is enhanced through study and annotation by active and qualified researchers. A Scientific Associates program is maintained and support is provided to amateur or professional botanists who are researching Australian and related plants.

Aims

- There is an adequate staffing structure and expertise base to manage the ANBG as a national institution and support the work of CANBR.

- A culture of personal professionalism is encouraged and staff are managed and supported to achieve high levels of job satisfaction, productivity and career succession.
- A culture of excellence is developed in botanic garden management, research and learning.
- The ANBG as a workplace is enhanced through collaborations and partnerships.

Issues

- To strengthen the ANBG, there needs to be a greater emphasis on building a workforce with appropriate levels of trained specialist staff to maintain core business and retain corporate knowledge, as well as providing opportunities to build careers.
- There is a need to have an integrated workplace encouraging effective communication and collaborative work among staff and volunteers to achieve the objective of repositioning the ANBG as a national institution through the implementation of this plan.
- Adaptive management strategies need to be supported by a progressive, outward looking culture that works towards best practice, effective change management and engagement with appropriate technologies, and that continues to seek contemporary and sustainable approaches that ensure efficient and effective use of resources.
- Resources (staff and finance) need to be managed to create opportunities for career advancement and to enable the ANBG to be a centre of learning for upcoming horticulturalists specialising in Australian plants.
- The curatorial standard of the ANBG collections and the ability to meet the nine stated goals are at risk due to resource constraints.

What we are going to do

Policies

- 8.1.1 The ANBG Internal Communication Plan will guide effective communication within the organisation and ensure staff are well informed about work and site related matters.
- 8.1.2 Scientific staff may supervise PhD or other postgraduate students where appropriate.
- 8.1.3 External expertise may be sought through an advisory council or specialist advisory committees to contribute specialist skills and knowledge on specific matters to the implementation of this management plan (see Action 9.5.6).

Actions

- 8.1.4 Review the ANBG organisation structure to ensure it meets business needs.
- 8.1.5 Develop and implement strategies to attract, develop and retain skilled staff including:
 - delivery of targeted staff training and development
 - development of an organisational culture of adaptive management including an adaptability to organisational change
 - implementing strategies for building and retaining corporate knowledge
 - providing opportunities for capacity building as part of staff succession planning.

- 8.1.6 Implement and review the ANBG Internal Communication Plan.
- 8.1.7 Develop and provide training, induction and/or materials to participants in ANBG programs such as the Visiting Scientist Program, Scientific Associate Program, Volunteer Program and Students Volunteer Botanical Internship Program.
- 8.1.8 Develop and implement a program to offer training and work experience for selected secondary and tertiary students, interns, trainees and apprentices within various sections of the ANBG, including CANBR. Such opportunities will be provided where there is mutual benefit for the ANBG and the educational institution involved (see also Actions 4.2.9 and 4.2.22).
- 8.1.9 Encourage scientific staff to supervise postgraduate students and share their expertise.
- 8.1.10 Develop and manage a program of collaborations and partnerships to strengthen and enhance the work of the ANBG.
- 8.1.11 Develop and manage the volunteer program operated under Parks Australia's Volunteer (Including Work Experience) Policy, including the provision of ongoing professional development, to support a broad range of ANBG activities and services.
- 8.1.12 Monitor the implementation of this management plan to ensure the ANBG's goals are achieved efficiently and effectively including assessing variations in workload and the distribution of resources (see Section 9.5, Plan implementation, monitoring and evaluation).

8.2 Revenue and financial management

Background

At the time of preparing this plan, the Director of National Parks (including the ANBG) is part of the Sustainability, Environment, Water, Population and Communities portfolio, funded by the Australian Government. Additional revenue from licensing and permit charges, 'user pays' programs, charges for professional services, hire of facilities, and entrepreneurial and philanthropic activities, have traditionally contributed a small amount to the ANBG's annual budget. The Friends of the Australian National Botanic Gardens has provided important financial support and added value to the ANBG by funding projects focused on visitor services and facilities, scientific and conservation research, and public education. The ANBG collections can be further enhanced by donations which may be offset under the Commonwealth's Cultural Gifts Program which provides tax incentives to donors. The ANBG has Deductible Gift Recipient status for its collections.

Under s.514C of the EPBC Act, the Director of National Parks has power to do all things necessary or convenient to carry out the functions of the Director (which includes management of the ANBG). These powers include entering into contracts; holding real and personal property; accepting gifts, devises and bequests made to the Director whether on trust or otherwise; and acting as trustee of monies or other property vested in the Director upon trust.

The ANBG's main scientific functions are conducted through CANBR. CSIRO acts as the agent for CANBR and administers funds for operational purposes. Salaries for all ANBG staff and the maintenance and capital costs of ANBG assets are met from the ANBG budget allocation.

Under s.356A of the EPBC Act the Director may, with the Minister's approval, determine and impose charges for entering or using the ANBG or part of the ANBG, using services or facilities provided by the Director in or in connection with the ANBG, and parking or stopping vehicles in the ANBG. At the time of preparing this plan a range of charges are in place (the Schedule of Charges).

Aims

- The ANBG's financial resources are diversified to enhance its operations and activities.
- Best practice financial management is applied to guide the efficient and appropriate management and use of resources.

Issues

- Delivery of core business, implementation of the actions of this management plan and adding value to the programs and developments proposed in this plan are subject to receipt of sufficient funding.
- Meeting the reporting needs of a multidisciplinary national institution may be assisted by streamlining current management systems.
- Procedures and policies for cost recovery and management of entrepreneurial and philanthropic pursuits require further development.

What we are going to do

Policies

- 8.2.1 An appropriate Schedule of Charges under s.356A of the EPBC Act will be maintained.
- 8.2.2 The Schedule of Charges may include provision for waiver or discount of charges.
- 8.2.3 Appropriate agreements will be entered into for receipt of funds to support the ANBG.
- 8.2.4 Where donations are accepted for a specific purpose, they will be used for that purpose or another purpose approved by the donor.
- 8.2.5 Inappropriate bequests may be refused or disposed of.
- 8.2.6 Appropriate philanthropic financial support, donations, contributions, sponsorship and bequests for purposes appropriate to the needs of the ANBG will be actively sought.
- 8.2.7 The Friends of the Australian National Botanic Gardens and other stakeholders will be encouraged and supported to raise money to support the ANBG.
- 8.2.8 Revenue raised will be used to enhance the work of ANBG programs and services provided to its stakeholders, subject to relevant legislation and policies applicable to the Director.

Actions

Administration

- 8.2.9 Annually review the Schedule of Charges.
- 8.2.10 Provide training and capacity building opportunities to appropriate staff in managing government monies, cost recovery, and managing entrepreneurial and philanthropic activities.
- 8.2.11 Develop a bequest policy (for both in-kind and financial bequests) which sets out relevant issues for those making bequests and requirements for the acceptance of bequests.
- 8.2.12 Encourage in-kind bequests such as appropriate items and collections for the ANBG library and image collection, herbarium specimens and equipment.
- 8.2.13 Encourage and support the Friends of the Australian National Botanic Gardens and other stakeholders to raise money to support the ANBG.

Fundraising

- 8.2.14 Develop a donations and sponsorship policy and associated guidelines.
- 8.2.15 Develop a business prospectus for various proposed ANBG developments and projects and implement strategies to secure appropriate funding for such developments and projects.
- 8.2.16 Develop a bequest program and an online donation system.

8.3 Health and safety

Background

The Director promotes high levels of health and safety awareness in accordance with the Director's duty of care and health and safety obligations. ANBG staff working on the CSIRO site, as part of CANBR, come under the provisions of CSIRO's health and safety workplace conditions.

A workplace Occupational Health and Safety Committee oversees hazard reduction strategies for the ANBG. The committee conducts regular inspections of workplaces and work practices to ensure appropriate standards are met. Similar procedures are in place for those working on the CSIRO site. Induction and training in safe work practices is provided for all staff, volunteers and visiting scientists, interns and associates. In addition, all staff are responsible for analysing, assessing and treating significant risks in relation to the functions, processes and activities that they undertake or in which they participate. All safety incidents are reported, recorded and reviewed regularly. Using this information, the Director compiles a Risk Watch List for the ANBG that identifies and rates a range of risks, including staff, volunteer and visitor safety. Where appropriate, additional strategies are identified and implemented to mitigate risks.

Visitor safety is an important priority and potential hazards to visitor safety are under constant review. The key risks at the ANBG are bushfires, high winds, falling branches, and icy roads and

paths during winter. Emergency evacuation and closure procedures have been developed and are regularly tested. A number of staff have been trained in first aid.

Fire management at the ANBG is subject to the *Emergencies Act 2004* (ACT) in so far as it is not inconsistent with the EBPC Act. The ANBG has limited fire fighting capability and is dependant upon the ACT Emergency Services Agency for fire suppression and other emergency support.

The EPBC Act (ss.354 and 354A) prohibits certain actions being taken in Commonwealth reserves except in accordance with a management plan including actions that impact upon members of a native species, damaging heritage and carrying out works or an excavation.

Aims

- The ANBG provides a safe and healthy environment for staff, volunteers and visitors.
- Health and safety incidents are responded to promptly, effectively and safely.

Issues

- Potential hazards may be exacerbated under future climate change scenarios and these may be difficult to predict.
- There is an ongoing need to manage safety issues related to car parking, while maintaining positive experiences for staff, volunteers and visitors.
- Wildfires that have the potential to have a serious impact on the ANBG may start outside the boundaries of the reserve and could impact on the living collection and ANBG infrastructure.

What we are going to do

Policies

- 8.3.1 The ANBG will strive to ensure a safe and healthy site for staff, volunteers and visitors through compliance with relevant legislation, appropriate training, identification of health and safety issues, hazard minimisation strategies and reporting, and reviewing and improving safety procedures.
- 8.3.2 The ANBG will work collaboratively with CSIRO to ensure a safe environment for staff working at CANBR.
- 8.3.3 All reasonable steps will be taken to ensure safe and healthy conditions for staff and volunteers as they work off-site (e.g. during field collecting trips) through risk assessment, harm minimisation strategies and training.
- 8.3.4 Staff will be offered appropriate training, seminars and counselling services.
- 8.3.5 In the case of threat to human life or property, the ACT Emergency Services Agency may operate within the ANBG, under the guidance of ANBG staff where appropriate. Where practicable, emergency response activities will take into account minimising disturbance to listed plant and animal species and areas of conservation or cultural significance.

Actions

- 8.3.6 Undertake a site-wide strategic risk assessment, linking to the environmental management system audit and a strategic asset management system (see Sections 9.1, Capital works and infrastructure, and 9.2, Environmental management system).
- 8.3.7 Identify risks from climate change impacts and extreme weather events as part of the ongoing Risk Watch Program.
- 8.3.8 Continue to undertake a regular program of site, workplace and work practice inspections to identify and document potential hazards for staff, volunteers and visitors, and review hazard management as part of the Director's Risk Management Policy.
- 8.3.9 Implement hazard reduction programs for tree management, bushfire prevention, and other hazards.
- 8.3.10 Provide safety training and awareness programs for relevant staff.
- 8.3.11 Undertake a regular review of aspects of capital works and maintenance programs related to improvements to staff and visitor safety and implement priority investments to ensure risks are within acceptable levels.
- 8.3.12 Provide pre-visit and on-site safety information to visitors.
- 8.3.13 Work with neighbours (e.g. Australian National University, CSIRO, ACT Parks, Conservation and Lands, Black Mountain Tower) and ACT Emergency Services Agency to develop a precinct response plan.

8.4 Security and law enforcement

Background

Encouraging compliance with relevant legislation is important in protecting the ANBG and its assets, values, visitors, staff and contractors. The Director is required to comply with the provisions of the EPBC Act, this management plan, and other relevant legislation and government policies.

Staff may be appointed by the Minister under the EPBC Act (s.392) as rangers or wardens, and exercise the powers and functions conferred on them by the Act and Regulations. In addition, all members and special members of the Australian Federal Police are ex officio wardens. Officers or employees of other Australian, state or territory government agencies may be appointed by the Minister as rangers or wardens. The Australian Government requires that investigating officers be trained to standards prescribed in the Commonwealth Fraud Control Guidelines.

A perimeter fence provides security for ANBG assets with after-hours patrols conducted by a commercial security firm. Buildings are fitted with secure locks and alarm systems. Assets held at CANBR on the CSIRO site are also held in secure buildings equipped with card access and alarm systems. Staff appointed as rangers or wardens conduct monitoring, visitor awareness raising and, if required, compliance and enforcement operations while on routine patrols and during specific, targeted programs at the ANBG. ANBG staff not appointed as rangers and wardens cannot exercise these powers, but can encourage compliance with legislation through education and non-confrontational interaction with visitors to raise their awareness of the value of the ANBG and appropriate visitor conduct.

Aims

- Awareness of, and compliance with, relevant legislation is improved through effective education and compliance programs.
- There is adequate protection of fixed assets.
- There is adequate protection of intangible assets, especially the living collection, herbarium specimens, the image collection and data stored electronically.

Issues

- There is a need to have sufficient operational staff trained in appropriate compliance procedures and with powers to enforce the EPBC Act and the Regulations to maintain a continuous presence on-site during business hours.
- ANBG assets, including technical equipment, located off-site at CSIRO need to be added to the ANBG asset register and their security assessed and maintained.

What we are going to do

Policies

- 8.4.1 Levels of security will be maintained consistent with ensuring the adequate protection of the ANBG's tangible and non-tangible assets.
- 8.4.2 The Parks Australia Compliance and Enforcement Manual will guide responses to potential breaches of the EPBC Act.
- 8.4.3 There will be an appropriately trained warden or ranger on site to ensure compliance during business hours.

Actions

- 8.4.4 Undertake development, implementation and review of compliance and enforcement strategies and procedures for managing ANBG issues in accordance with the Parks Australia Compliance and Enforcement Manual, other Parks Australia policies, Australian Government standards, legal requirements and risk management principles.
- 8.4.5 Provide training for staff and relevant volunteers in the use of positive non-confrontational communication techniques.
- 8.4.6 Provide ongoing compliance and law enforcement skills assessment and training for staff appointed, or likely to be appointed, as wardens and rangers.
- 8.4.7 Annually review building and site security in relation to meeting duty of care responsibilities under the *Occupational Health and Safety (Commonwealth Employment) Amendment Act 2006*, including commercial security arrangements, and enhance or adapt security measures where appropriate.
- 8.4.8 Maintain and annually review the asset register.

8.5 Adjacent lands

Background

The ANBG shares boundaries with Canberra Nature Park, CSIRO and with land owned by the ACT Government (vacant at the time this plan is being prepared). The ANBG is situated immediately west of the Australian National University and shares an access road to the north of the site with the University's paleomagnetic laboratory.

The ANBG's boundaries are set out in its proclamation, by reference to blocks identified on maps that existed at the time of proclamation (September 1991). The exact cadastral boundaries of these blocks are a matter of ongoing discussion with the ACT Government and the National Capital Authority.

Parts of the ANBG's scientific operations are based at CANBR and the Australian National Herbarium at the CSIRO Black Mountain site. As a result, pedestrian and light vehicle access between the ANBG and CSIRO sites is required.

Aim

- Cooperative relationships and partnerships are developed and maintained with neighbours and stakeholders in a manner that focuses on achieving common management aims effectively and efficiently.

Issues

- Developing and maintaining relationships and partnerships with neighbours and stakeholders can increase support for the management of the ANBG, help to manage issues of common interest and make the best use of available resources.
- ANBG cadastral boundaries need to be clarified.

What we are going to do

Policy

- 8.5.1 The ANBG will cooperate with neighbours managing adjacent lands in matters relating to the maintenance of boundary areas, fences and shared resources such as roads.

Actions

- 8.5.2 Actively participate in meetings and discussions with relevant neighbours and stakeholders to take an integrated approach to the management of the site and adjacent lands. There will be a particular focus on operations related to fire management, feral animals and weed control.
- 8.5.3 Liaise with the ACT Government and National Capital Authority and adjacent land owners concerning the definition of the cadastral boundaries of the site, and resolve these if possible.

8.6 Leases, licences and associated occupancy issues

Background

Section 358(2) of the EPBC Act allows the Director to grant a lease or licence relating to land in a Commonwealth reserve provided it is in accordance with a management plan.

At the time of preparing this plan leases have been granted for occupation and operation of the café and bookshop at the ANBG.

During the life of the plan it may be appropriate to consider granting leases and licences of land for other purposes e.g. to new and emerging business enterprises or to utility providers (for areas of land containing cables and pipes for electricity, gas, water or communication services). It may also be appropriate to issue leases for short-term, exclusive use of an area e.g. for events.

Aim

- Leases, licences and the management of associated occupancy issues are provided for appropriately.

Issues

- Leases, licences and other occupancies need to be established and maintained to appropriate standards, including minimising adverse impacts on ANBG values.
- Rights to occupy and use ANBG land should be formalised.

What we are going to do

Policies

- 8.6.1 The Director may grant leases and licences relating to ANBG land.
- 8.6.2 Decisions about leases and licences will be made taking into account the impact assessment of the proposal under Section 9.3, Assessment of proposals.
- 8.6.3 The Director may determine the rent/occupation fee for each lessee or licensee and the length of any lease or licence.
- 8.6.4 Leases and licences will:
- clearly define the area covered by the lease or licence
 - include provisions for minimising adverse impacts on ANBG values
 - include environmental protection measures including, where necessary, waste management.

Action

- 8.6.5 Monitor and take appropriate action to ensure that occupation and use of land within the ANBG have minimal adverse impact on ANBG values.

Goal 9: Demonstrate environmental best practice and sustainable management

Direction setting

The ANBG will place sustainability principles at the core of all its activities. These principles will embrace:

- the fundamental role of plants in a sustainable Australian society
- the protection and enhancement of the ANBG's natural and cultural heritage
- recognition and understanding of the potential impacts of climate change and other threats to Australia's biodiversity
- efficient use of resources including energy and water

The ANBG will aspire to minimise its ecological footprint by pursuing environmental best practice and providing a role model for similar institutions and the Australian public. Monitoring, evaluating and reporting on environmental performance and using the results from these processes to adapt management programs will assist in achieving this goal.

Performance indicators

The following indicators will be used to measure performance in meeting Goal 9:

- Level of visitor satisfaction with new infrastructure, plantings and developments expressed through visitor surveys.
- Results from a site audit modelled on the ISO 14001 environmental management standard, used by organisations for designing and implementing an effective environmental management system, and consistent with ISO 14064-1, the international standard for reporting on greenhouse gas emissions.
- Extent to which water and energy use meets objectives and targets.
- Impact of the ANBG education program on the environmental understanding and behaviour of visitors expressed through routine surveys.

9.1 Capital works and infrastructure

Background

The ANBG has complex infrastructure to support its diverse functions including research, horticultural activities and education. This infrastructure includes office buildings, classrooms and meeting rooms, science laboratories, glasshouses, buildings which require controlled temperature and humidity, irrigation and specialist plant and equipment and a range of visitor facilities. The site has been developed over 40 years, and many of the buildings on-site were constructed in the early 1970s.

All capital works, and major asset replacement and cyclical maintenance for infrastructure, is outsourced to private contractors. A small team of trades staff, assisted by qualified tradespeople under contract, undertake a wide range of minor repairs and maintenance, including to the ANBG irrigation system. Strategic and effective use of funding for asset management would be assisted by an asset management system based on life-cycle costing techniques.

Some capital works infrastructure is managed by external agencies e.g. telecommunication lines and pipelines for public utilities which fall within the ANBG's boundary.

Bushfire incursion from adjacent lands presents a significant risk to ANBG infrastructure, buildings and collections, as well as to staff and visitors. The ANBG has developed and implemented an integrated fire protection and control strategy and works collaboratively with neighbours, key agencies and ACT emergency services to maintain and implement bushfire prevention and control plans.

Sections 354 and 354A of the EPBC Act prohibit the Director and other persons carrying on an excavation, erecting a building or other structure, or carrying out works in the reserve except in accordance with a management plan. Regulation 12.11 of the EPBC Regulations, which applies to works by third parties, operates subject to ss.354 and 354A of the Act and the management plan.

Aims

- Buildings and visitor facilities meet the needs of visitors, staff and volunteers in an efficient and cost-effective manner, while conserving the landscape and environmental values of the site and showcasing and promoting sustainable living principles wherever possible.
- Visitors and staff are provided with safe and efficient access routes into and around the ANBG.

Issues

- Funding for major repairs, maintenance and replacement competes with funding for new infrastructure and assets.
- Major new developments will need external funding.
- There is a need for an asset management system that enables systematic forward planning and appropriate depreciation assessments.
- A number of buildings are inappropriately sited and cannot support business needs.
- Physical distances between workplaces across the site challenge effective communication and cross-disciplinary collaborations.

What we are going to do

Policies

- 9.1.1 The Director may carry on an excavation, erect a building or other structure, or carry out works at the ANBG, including in relation to capital works and infrastructure, that promotes or enhances the values of the ANBG and does not significantly impact or detract from these values.

- 9.1.2 Third parties may carry on an excavation, erect a building or other structure, or carry out works at the ANBG to develop and maintain capital works and infrastructure in accordance with Section 9.3 of this plan, and:
- in accordance with a lease or licence granted by the Director (see Section 8.6, Leases, licences and associated occupancy issues) or
 - in accordance with a permit or approval issued by the Director.
- 9.1.3 Third parties who undertake capital works and infrastructure development and other works must meet the costs of any rehabilitation and environmental impact assessments required as a result of the works.
- 9.1.4 Infrastructure development will be based on the site development plan (see Action 2.2.4) and will be guided by:
- sustainability principles including water and energy efficiency
 - excellence in design
 - protecting the environmental and aesthetic amenity of the living collection
 - minimising adverse impacts on wildlife
 - consideration of potential workflow efficiencies through co-location of office and laboratory accommodation
 - consideration of potential benefits for visitors through improved access and facilities
 - suitability of staff and visitor amenities
 - occupational health and safety considerations
 - ongoing maintenance and funding requirements
 - minimising impacts on staff, visitors and businesses operating in the ANBG.
- 9.1.5 Decisions about capital works and infrastructure and other works will be made in accordance with Section 9.3, Assessment of proposals.
- 9.1.6 Access to all areas of the site must be consistent with function, security, safety and public use requirements.

Actions

- 9.1.7 Consider infrastructure related developments outlined in the ANBG Development Planning Guide (1992) in preparing the new site development plan (see Action 2.2.4). Potential projects highlighted through the planning process for this management plan for possible consideration include:
- development of an integrated administration and works centre
 - co-location of the visitor centre and shop and rationalisation of associated precinct facilities in and around the existing café
 - development of an interactive education garden for children with the aim of developing an enduring appreciation and interest in plants and gardens
 - construction of a conservatory and support glasshouses (see Action 1.1.33)
 - development of loop paths from the main path

- development of an alpine garden
 - completion of the Red Centre garden
 - create opportunities for new businesses and revenue.
- 9.1.8 Include risk management in annual operational planning and capital works bids.
- 9.1.9 Maintain and develop infrastructure and assets to improve the work environment and enhance visitor experiences.
- 9.1.10 Review and update the ANBG Water Management Strategy (2008–12).
- 9.1.11 Contribute to the development of a new asset management system within Parks Australia that more adequately assesses the ANBG's assets and infrastructure (and relevant assets at CANBR) and uses life-cycle costing techniques and an environmental management system.
- 9.1.12 Develop a strategic forward planning schedule for maintaining assets and building new assets, based on the site risk assessment (see Section 8.3, Health and safety) and environmental management system (see Section 9.2, Environmental management system).
- 9.1.13 Conduct a site-wide assessment, linked to the site development plan, to strategically prioritise capital works and repair and maintenance programs, and subsequently develop an annual review and reporting system.
- 9.1.14 Implement a program of replacement or alternative approaches for plant, equipment and other infrastructure with high maintenance requirements, high energy use and low functional efficiency, initially focusing on office buildings and horticultural facilities as they reach the end of their useful life.
- 9.1.15 Review existing records of infrastructure and assets (including spatial data) to support efficient asset management and inform governance and decision-making associated with land within the reserve, and maintain mapping layers for the site relating to boundary, roads, buildings, garden-bed sections and services.
- 9.1.16 Monitor and maintain vehicular traffic according to the ANBG's Vehicle Movement, Parking and Gate Policy.

9.2 Environmental management system

Background

The Director supports environmental best practice principles and the department has an environmental management commitment. Over recent years, environmental management at the ANBG has primarily focused on responsible water use. This has been a priority in its operations and has involved:

- installation of a computerised irrigation system to achieve optimum water efficiencies and sound management practices
- systematic audits of irrigation performance
- reconfiguring sprinkler systems to realise water savings

- splitting irrigation systems to take into account the natural seepage of water down slopes
- reducing lawn watering and applying wetting agents to lawns and gardens to aid with water penetration into the soil profile
- designing the nursery to capture, treat and recycle water.

Environmental management will increasingly become more systematic in the way that it addresses the environmental impacts of the ANBG activities, reflecting the ANBG's role in sustainable management and conservation of Australia's environment. In a time of changing climate, the ANBG will focus on and undertake activities that reduce its carbon footprint.

Aim

- Environmentally responsible management practices are adopted, modelled on ISO 14001 and consistent with ISO 14064-1, that demonstrate and implement sustainability principles. These practices are promoted through communication media and visitor services.

Issues

- There is a need to retrofit or replace ageing infrastructure and assets at or before the end of their life cycle (which were designed prior to widespread application of sustainability principles in construction/infrastructure).
- A holistic strategic systems approach to environmental sustainability, based on ISO 14001 and consistent with ISO 14064-1, will guide future operations and developments.
- To raise public awareness, promotional material and visitor information need to communicate the ANBG's efforts to minimise environmental impacts, including energy and water efficiency measures.
- There is a need to ensure that the ANBG's education for sustainability activities complement those of other agencies, while still offering unique elements focusing on the conservation and sustainable use of Australia's biodiversity.

What we are going to do

Policies

- 9.2.1 Environmental responsibility and the principles of sustainability will guide ANBG operations and practices, including construction and landscaping (see Section 9.3, Assessment of proposals).
- 9.2.2 Resource use and impact of activities on the environment will be monitored, with particular attention given to energy and water use and waste production.

Actions

- 9.2.3 Undertake an audit (modelled on ISO 14001 and consistent with ISO 14064-1) that considers the environmental impact of the ANBG's developments and operations.

- 9.2.4 Use the audit findings to develop and implement an environmental management system for the site with short-term, medium-term and long-term aims and targets and using adaptive management principles to ensure continuous improvement.
- 9.2.5 Engage staff in working groups to implement and monitor the environmental management system.
- 9.2.6 Regularly monitor and report on the ANBG's environmental performance.
- 9.2.7 Actively promote ANBG environmental management practices to visitors and other stakeholders.
- 9.2.8 Conduct a visitor study to ascertain any influences of the ANBG experience and education program on visitors' environmental understanding and behaviour.

9.3 Assessment of proposals

Background

Activities proposed to be undertaken at the ANBG must be assessed for their potential impacts before a decision can be made on whether the activity should go ahead. Impacts that need to be considered include impacts on the botanic garden values. Proposed actions of a routine nature that are authorised by or under policies and actions in this management plan generally do not require impact assessment.

Some proposed activities may be 'controlled actions' (see page 22, Legislative context) and require assessment and approval by the Minister under the EPBC Act because they are likely to have a significant impact on the ANBG's heritage values or other social, economic, environmental, natural and cultural values.

Proposed actions that do not trigger the EPBC Act's assessment and approval provisions may still have impacts that require assessment before a decision can be made on whether the action should go ahead.

Decisions on whether or not proposals should be approved are guided by an environmental impact assessment process.

Aim

- The likely impacts of proposed actions on ANBG values are properly considered before decisions are made, and that values are maintained through effective assessment procedures and subsequent management.

Issues

- If not properly assessed and managed, proposed actions may impact on ANBG environmental and cultural values.
- Up to date, clear and consistent guidelines and procedures are needed for assessing proposals.
- Assessment of proposals by staff may require reallocation of priorities or additional resources.

What we are going to do

Policies

- 9.3.1 The potential impacts of all proposed actions will be considered, and where necessary assessed, in accordance with Table 1, the assessment matters and considerations outlined in Table 2 and the following prescriptions.
- 9.3.2 Proposed actions that are considered likely to have more than a negligible impact, but are not controlled actions under the EPBC Act, will be assessed in accordance with ANBG impact assessment procedures.
- 9.3.3 Assessment of proposed activities that are not controlled actions may be carried out by ANBG staff, proponents of the proposed activity, or independent experts.
- 9.3.4 Subject to the EPBC Act, the Director may recover from proponents the costs associated with administering, assessing and managing proposals.

Actions

- 9.3.5 Review and modify, where appropriate, Parks Australia's impact assessment procedures in the ANBG context and integrate the procedures into the ANBG Operational Manual (i.e. the ANBG's internal policy and guidelines manual).
- 9.3.6 Implement training for relevant staff in impact assessment procedures.

Table 1: Decision-making process and impact assessment procedures

Category	Example	Decision-making process and impact assessment requirements
Category 1		
<p>Actions considered likely to have no impact, or no more than a negligible impact, on the ANBG's environment and natural and cultural values</p>	<p>Minor capital works e.g. maintenance, replacement, repairing or improving existing infrastructure in its present form</p> <p>Regular/routine ongoing operations to implement prescriptions in this plan e.g. patrols/weed control/ maintaining the living collection</p> <p>Issuing permits for regular activities in accordance with this plan e.g. image use permits, research</p>	<ul style="list-style-type: none"> • No assessment required • Use minimal impact work practices when implementing actions
Category 2		
<p>Actions considered likely to have more than a negligible impact, but not a significant impact, on the ANBG's environment and natural and cultural values</p>	<p>Moderate capital works e.g. new infrastructure or moderate expansion/upgrade of existing infrastructure</p> <p>Rehabilitation of heavily eroded sites</p> <p>Developments for approved existing tourism activities that do not require major works</p> <p>Minor new operations or developments to implement prescriptions in this plan</p>	<ul style="list-style-type: none"> • Assessment by ANBG staff, proponent, or independent expert • Assessment in accordance with procedures approved by Director
Category 3		
<p>Actions considered likely to have a significant impact on the ANBG's environment and natural and cultural values</p>	<p>Major capital works e.g. new major infrastructure or major expansion/ upgrade of existing infrastructure</p> <p>Major new operations or developments to implement prescriptions in this plan</p> <p>Major/long-term changes to existing visitor access arrangements</p> <p>New types of commercial activities</p>	<ul style="list-style-type: none"> • Director will consider whether action should be referred for consideration as a 'controlled action' under the EPBC Act • If action referred and Minister decides it is a controlled action no assessment required by ANBG staff • If action not referred, or referred and Minister decides it is not a controlled action, assessment as for Category 2

Table 2: Environmental impact assessment matters and considerations

Matters for assessment	Considerations include, but not limited to
1. Environmental context	
a. What are the components or features of the environment in the area where the action will take place?	<ul style="list-style-type: none"> • Species, ecological communities in the ANBG and regional context • Matters of national environmental significance • Cultural features • Heritage feature • Socio-economic values • Tourism and recreational values • Aesthetic/landscape values • Scientific reference areas
b. Which components or features of the environment are likely to be impacted?	<ul style="list-style-type: none"> • Short- and long-term impacts on- and off-site
c. Is the environment which is likely to be impacted, or are elements of it, sensitive or vulnerable to impacts?	<ul style="list-style-type: none"> • Species, ecological communities • Matters of national environmental significance • Cultural values (including sacred sites) • Heritage values • Tourism and visitor experience • Cumulative impacts from a range of activities across the ANBG on the environment or its elements • Uniqueness of elements within the ANBG and regional context
d. What is the history, current use and condition of the environment which is likely to be impacted?	<ul style="list-style-type: none"> • Comparison with condition of similar sites elsewhere in the ANBG
2. Potential impacts	
a. What are the components of the action?	<ul style="list-style-type: none"> • Include associated infrastructure and stages
b. What are the predicted adverse impacts associated with the action including indirect consequences?	<ul style="list-style-type: none"> • Include indirect and off-site impacts
c. How severe are the potential impacts?	<ul style="list-style-type: none"> • Consider scale, intensity, timing, duration and frequency
d. What is the extent of uncertainty about potential impacts?	
3. Impact avoidance and mitigation	
e. Will any measures to avoid or mitigate impacts ensure, with a high degree of certainty, that impacts are not significant?	<ul style="list-style-type: none"> • State whether there are any alternative sites for proposal
4. Significance of impacts	
Considering all the matters above, is the action likely to have a significant impact on the environment?	<ul style="list-style-type: none"> • If yes, the Director will consider whether action should be referred for Ministerial consideration under the EPBC Act

(Note: This table is a guide only)

9.4 New activities not otherwise specified in this plan

Background

This plan sets out how the ANBG will be managed for a period of ten years. During that time, circumstances may arise or proposals be brought forward for actions which are not anticipated at the time this plan is being prepared that require the Director to take actions that are not covered by specific prescriptions in this plan. Under ss.354 and 354A of the EPBC Act, certain types of actions can only be taken if they are authorised by a management plan (including acts in relation to native species, works and actions for commercial purposes). The Director is required by the Act (s.362) to exercise the Director's powers and to perform the Director's functions so as to give effect to the management plan.

Aim

- The Director is able to respond to new issues and proposals consistent with this plan and the EPBC Act and Regulations.

Issue

- This plan needs to enable appropriate actions to be taken and authorised that are not specified by other prescriptions in the plan because they were not foreseen at the time of writing the plan.

What we are going to do

Policies

- 9.4.1 The Director may take actions that are not covered by specific prescriptions in this plan, including actions covered by ss.354 and 354A of the EPBC Act or the EPBC Regulations. Proposed actions will be considered and assessed in accordance with IUCN Australian reserve management principles, in light of their potential impacts and with regard to relevant legislation, treaties, agreements and partnerships.
- 9.4.2 The Director may take an action or authorise (whether by permit, contract, lease or licence) actions by other persons that are not covered by specific prescriptions in this plan, including actions covered by ss.354 and 354A of the EPBC Act or the EPBC Regulations.
- 9.4.3 Except in cases of emergency, the decision-making and impact assessment processes prescribed in Section 9.3 of this plan apply to actions under this section.

9.5 Plan implementation, monitoring and evaluation

Background

It is recognised that elements of this management plan are ambitious. It will require sustained effort and commitment to strengthen the ANBG's position as a national institution and to further enhance its role in science, conservation, horticulture and education.

This management plan addresses core business and recommends strategies and actions for adding value to this core business. To construct new facilities, additional funding based on the successful presentation of a business case will be required. Where appropriate, external funding sources and partnerships will be investigated and sought.

Review of the plan may be carried out at any time, although an annual review of progress in implementing the plan will be instituted. Annual reviews will examine the extent to which management strategies have been implemented and the extent to which they are meeting the stated aims and goals. They will also consider how available resources might best be allocated to meet the range of objectives identified.

Mechanisms for such reviews will be incorporated into the work plan for each management unit within the ANBG. Where management strategies are obsolete, a report will be provided to the Director of National Parks.

Performance indicator

- Extent to which this plan is implemented, issues are addressed and its aims are met.

Aim

- This plan is effectively implemented.

Issues

- Clear, accurate and regular information regarding the implementation of this plan needs to be provided to the Director of National Parks.
- A management system to support the implementation schedule for this plan needs to be developed.
- Work policies, procedures and programs must be consistent with the plan and relevant government legislation and policies.
- Adequate resources are needed to enable implementation of the plan.

What we are going to do

Policies

- 9.5.1 Priorities for implementing the actions in this plan will be determined by the need to:
- protect and promote the values of the ANBG and its National Heritage and Commonwealth Heritage values
 - ensure visitor safety
 - ensure cost effectiveness
- 9.5.2 Sufficient funds will be sought to effectively implement this plan.
- 9.5.3 The ANBG work program, expenditure, staff learning and development plans will be linked to implementing this plan and any other priorities determined by the Director.

Actions

- 9.5.4 Develop an implementation schedule for this plan and use it to determine and report on annual priorities and the development of program operational plans and individual work plans.
- 9.5.5 Develop a database management system to support the implementation schedule for this plan.
- 9.5.6 Investigate models and implement a cost effective advisory council or advisory committees that would provide additional expertise to the ANBG on specific matters and assist in achieving goals and actions in this management plan.
- 9.5.7 The ANBG Executive Director will report regularly to the Director of National Parks on the implementation of this plan and manage expenditure consistent with government requirements and in accordance with the Director's Chief Executive Instructions.
- 9.5.8 During the life of this plan, undertake a business review of charges determined and imposed by the Director of National Parks under ss.356 and 356A of the EPBC Act for entering or using a Commonwealth reserve or part of a Commonwealth reserve and using services or facilities provided by the Director. New charges will be determined and implemented where appropriate, subject to approval by the Minister.
- 9.5.9 In consultation with the Director of National Parks and appropriate agencies and interest groups, investigate a cost recovery plan for certain services provided by the ANBG and implement the cost recovery plan as appropriate.
- 9.5.10 Following consultation with relevant stakeholders, develop and/or periodically review ANBG policies and operational procedures and present them to the Director of National Parks for consideration.
- 9.5.11 Undertake an ongoing series of visitor studies to inform future planning. During the life of this plan, undertake a study of community expectations and perceptions of the appropriate future direction for the ANBG.

9.5.12 Prior to preparation of the fourth management plan, prepare and present to the Director of National Parks a technical audit of this plan. The audit will include, but not be limited to, the following terms of reference:

- consideration of each prescribed management policy and action and determination whether or not it was successfully implemented
- evaluation of the performance of each prescribed policy and action in relation to the section aim(s) that it was intended to achieve
- in the case of any prescribed policy and/or action that was not implemented, or which failed to achieve the desired aim(s), determination of the cause
- recommendations to the Director of National Parks regarding any changes to the aims, policies and actions that should be considered during preparation of the fourth plan.

References

Council of Heads of Australian Botanic Gardens (2008) *National strategy and action plan for the role of Australia's botanic gardens in adapting to climate change*. Canberra: Council of Heads of Australian Botanic Gardens.

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United Nations Environment Programme (1994) *Convention on Biological Diversity text and annexes*. Switzerland: The Interim Secretariat for the Convention on Biological Diversity, United Nations Environment Programme.

Wyse Jackson, P.S. and Sutherland, L.A. (2000) *International agenda for botanic gardens in conservation*. London: Botanic Gardens Conservation International.



*'The Friends' Cascades, a public art project
funded by the Friends of the ANBG*

Photo: Andrew Tatnell, DSEWPaC

Appendix A

Key planning documents for the Australian National Botanic Gardens

ANBG development plan: Lester Firth Associates 1985

The plan set out a series of planning principles relating to ANBG operations and development. Specific recommendations were made concerning reorganisation of the facilities and integration of development proposals prioritised over a ten-year works program. Due to changes in the statutory, administrative and financial framework within which the ANBG operates, the 1985 plan is considered redundant.

The plan provides a physical site analysis.

Relevance to this management plan

The plan outlines planning principles and highlights ongoing issues e.g. limited visitor use of the ANBG, vehicular flow, dispersed work areas, fast food and restaurant catering operating from one facility, and poor display facilities for the orchid collection.

ANBG development planning guide: The Hassell Group 1992

The guide's objectives were to provide the ANBG with a program of possible development in the context of its unique scientific values and cultural heritage while meeting the corporate goals and philosophy of the ANBG mission statement. It also provided an implementation strategy and capital works cost estimates. The ANBG landscape character is highlighted. The guide includes functional analysis and flow analysis.

Relevance to this management plan

The guide takes a visionary approach to 'developing' the ANBG and contains several ideas that continue to be considered appropriate by stakeholders. It highlights ongoing key issues and needs e.g. the need for public transport access, improved display and housing facilities for the orchid collection, a children's learning/play area, and separate restaurant and kiosk facilities. The guide highlights the context, landscape character and functional analysis of the site and outlines planning principles.

ANBG plan of management 1993–1998: Australian Nature Conservation Agency 1993

In 1991, the ANBG was proclaimed a reserve under the *National Parks and Wildlife Conservation Act 1975*. This management plan incorporated many of the recommendations in the *Development planning guide* (Hassell Group 1992). It addressed the philosophy of the ANBG including its national and international roles. It includes a relatively detailed thematic plan for the living collection, and focuses on detailed context, background and policy with a limited number of actions, although the actions have some detail. The plan highlights historical staffing issues and outlines priorities for implementation under aims. It includes maps of new developments. The ANBG Advisory Committee's role was to review annual progress in implementing the plan.

Relevance to this management plan

The plan highlights ongoing key challenges such as multiple work areas and inadequate resources for managing a national institution.

Amendment of the National Capital Plan. Amendment No. 16 master plan for the ANBG and background report: National Capital Authority 1996

Approved and gazetted on 11 December 1996, the amendment changed the general land use policy from 'hills, ridges and buffer spaces' to 'urban areas'; removed the 'future arterial road' symbol between the eastern boundary of the ANBG, CSIRO and Clunies Ross Street; included the ANBG in the Central National Area and removed it from the Inner Hills Designated Area; allowed for the possible long-term expansion of the ANBG; identified the ANBG as 'national capital use'; the reservoir site on Black Mountain Drive as 'public utility'; Black Mountain Drive as 'road'; and the remaining land as 'uncommitted land'; introduced master plan principles to guide the planning and development of the site in accordance with its national significance; inserted a definition for 'botanic gardens'; included the ANBG in the definition of 'national capital use'; and amended the relevant figures in the National Capital Plan.

Relevance to this management plan

The ANBG is on national land and any developments require approval from the National Capital Authority. This amendment outlines the ANBG's importance as part of Canberra's portfolio of national institutions and highlights various values. It also discusses the ANBG's importance in terms of visual, physical and symbolic linkages and outlines landscape, environment, activity location and building principles and policies.

ANBG management plan 2002–2008: ANBG 2001

This plan contains policy and procedural statements including ongoing responsibilities and developments. In contrast to the first management plan there are numerous actions to be implemented. This plan is ambitious and incorporated many of the recommendations in the *Development planning guide* (Hassell Group 1992), although it did not make reference to this development planning guide.

Relevance to this management plan

The second management plan is a detailed policy document that provides an outline of key ongoing operations and highlights the core work of the ANBG as an institution and strategies for managing the reserve. A technical audit of the plan highlighted key successes and issues at the ANBG from 2002 to 2008.

Of the 285 actions outlined in the plan, nearly two-thirds have been implemented; with 54 per cent of these being 'ongoing' actions. More than one-fifth of the actions have been partially implemented and a few of these are 'ongoing'. Around 16.1 per cent of actions have not been implemented. There were several actions either not implemented or partially implemented due to a lack of available resources including funding, staff, and capacity. The lack of operational systems to accept monies from external sources weakened the ANBG's ability to implement significant developments.

Appendix B

Commonwealth Heritage values of the Australian National Botanic Gardens

Summary statement of significance

The ANBG is important for containing rare and endangered native plant species in cultivation (Criterion B). The ANBG is important for its value as a research and teaching site based on the extensive herbarium collections which are linked to the living plant collections; this is rare on such a scale in Australia (Criterion C).

The ANBG is important for aesthetic characteristics valued by the community as it exhibits an attractive park landscape with a well balanced integration of spaces and form; interest from the vegetation details of the variety of native species; contrasts of small and large plants, waterform, rockform and colour; vistas of major Canberra features including Parliament House and many enframed attractive views across the lake (Criterion E).

The ANBG is important for demonstrating a high degree of technical achievement by establishing a living collection linked to the herbarium collections. It also demonstrates design excellence in construction of certain garden features, in particular the Rain Forest Gully which represents a geographic transect up the east coast of Australia and the rockery area with its carefully contrived combination of rocks, pools and running water.

The ANBG is innovative in being the first public garden composed essentially of Australian native plants with some related species. Public gardens of this type are rare (Criteria F and B).

Commonwealth Heritage official values

Criterion B: Rarity

The place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.

The ANBG is important for containing rare and endangered native plant species in cultivation. It is the first public garden composed essentially of Australian native plants, with some related species. Public gardens of this type are rare.

Attributes

The whole native garden, plus rare and endangered native plant species in cultivation.

Criterion C: Research

The place has significant heritage value because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history.

The ANBG is important for its value as a research and teaching site based on the extensive herbarium collection linked to the living plant collection; this is rare on such a scale in Australia.

Attributes

The combination of herbarium and living plant collections.

Criterion E: Aesthetic characteristics

The place has significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.

The ANBG is important for aesthetic characteristics valued by the community as it exhibits an attractive park landscape with a well balanced integration of spaces and form; interest from the vegetation details of the variety of native species; contrasts of small and large plants, waterform, rockform and colour; vistas of major Canberra features including Parliament House and many enframed attractive views across the lake.

Attributes

All the features noted above.

Criterion F: Technical achievement

The place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.

The ANBG is important for demonstrating a high degree of technical achievement by establishing a living collection linked to the herbarium collection. It also demonstrates design excellence in construction of certain garden features, in particular the Rain Forest Gully which represents a geographic transect up the east coast of Australia and the rockery area with its carefully contrived combination of rocks, pools and running water. The ANBG is innovative in being the first public garden composed essentially of Australian native plants with some related species.

Attributes

The living collection linked to the herbarium collection, the Rain Forest Gully, the rockery area, plus the fact that the ANBG was the first major public garden composed essentially of Australian native plants.

History

The creation of a Botanic Gardens in Canberra was first recommended in 1933 by the Advisory Council for the then Federal Capital Territory. Also in 1933 Dr Bertram Dickson, Chief of the Commonwealth Scientific and Industrial Organisation (CSIRO) Division of Plant Industry was asked to examine the feasibility of the proposal. In his report in 1935, Dickson supported the proposal and recommended a site on the lower slopes of Black Mountain. The project was deferred firstly because of the Depression and later because of World War Two. However, shortly after the war, Lindsay Pryor, Superintendent of Parks and Gardens in the Australian Capital Territory (ACT), began development of the Botanic Gardens.

The site of the Gardens was previously leased for grazing. Pryor took the opportunity of an International Forestry Conference in 1949 to arrange for the Prime Minister, Ben Chifley and the Director of the Royal Botanic Gardens at Kew, Sir Edward Salisbury, to plant trees to formally start the Gardens. Planning and planting continued throughout the 1950s. Dickson's report had stressed the importance of including Australian flora in the Gardens and a policy was adopted giving priority to native plants. This priority reflected increasing community appreciation of Australian flora in the late 1950s and 1960s. The Jervis Bay annexe was also developed in this period. It was intended as a frost free environment to complement the site in Canberra. Another annexe for cold tolerant plants was established at Mount Gingera to the west of Canberra. This latter annexe was started in the 1950s but active maintenance ceased in the late 1960s and the area is no longer part of the ANBG.

The Gardens were, from the beginning, a scientific institution and a herbarium and library were established in the first building on the site in 1966. The herbarium was started by Pryor and continued by botanists Erwin Gauba and M E (Betty) Phillips. A laboratory for horticultural research was built in 1970. A key part of the work of scientific staff was and continues to be field collecting expeditions. The basic structure of the Gardens, with sections devoted to different taxonomic plant groups, was established in its early years. This has been followed by sections devoted to ecological themes, such as the Rainforest Gully which was started in 1968. Different environments were created by modifying the microclimate and landform to provide different plant habitats.

The Gardens were first opened to the public in 1967 and were formally opened by Prime Minister Gorton in 1970. At this time they were called the Canberra Botanic Gardens.

Public information and education programs were started in the late 1960s and the Gardens now has an Environmental Education Centre. A photographic collection was also established at this time and this has grown into a large and important reference collection. Research focusing on orchids began in the mid 1970s and the living collection of Australian orchids is now the most extensive in cultivation. Also at this time the Gardens began to establish a significant collection of cryptogams particularly mosses and lichens.

A new building was constructed for the herbarium and library in 1974 and the Gardens were renamed the National Botanic Gardens in 1978. Other developments included the Rock Garden (1980), Kiosk (1981), Banksia Centre (1982) and Visitor Information Centre (1985).

In 1984 the name was again changed to the Australian National Botanic Gardens. During the 1980s the ANBG computerised the records of the living collection and began the process of computerising herbarium records. The ANBG manages the index of plant names for all of Australia and plays a leading role in the coordination of botanical data standards in Australia.

In 1994–95 the ANBG's herbarium was combined with CSIRO Division of Plant Industry's Australian National Herbarium in a joint venture as part of the Centre for Plant Biodiversity Research. The two herbaria have been re-organised across the two sites, one being at the ANBG and the other at CSIRO's Black Mountain complex.

Physical description

The area is located on the north-eastern side of Black Mountain and consists of steep to gently sloping hillsides cut by several gullies. The setting is within dry sclerophyll woodland dominated by *Eucalyptus rossii*, *E. mannifera* ssp. *maculosa* and *E. macrorhyncha*. Soils in the area are predominantly red/yellow earths and red earth/ red podsolic soils with associated lithosols and siliceous sands.

The ANBG comprises sections devoted to different taxonomic plant groups and ecological themes focused on Australian native plants. The site is crossed by a network of paths which wind amongst the various garden beds. Areas of native bushland are still present on the site. One area on the upper slopes had been developed as a nature trail. Special features include the eucalypt lawn, rockery, rainforest gully, mallee shrubland, Hawkesbury sandstone area and the Aboriginal trail. The rainforest area has been developed in what was previously a dry gully and has been planted to represent the eastern coast of Australia: Tasmanian species occupy the lower end of the gully and Victorian, New South Wales and Queensland species in sequence move up the gully.

The ANBG is used as an education centre from primary to tertiary levels including horticultural and taxonomic training. It is also important for scientific research into the taxonomy, horticulture and biology of native plant species. The living collection, including the seed bank, is particularly important for this function. A large number of rare and endangered plant species are included in the living collection, thus ensuring the preservation of their genotypes and allowing some protection through cultivation.

Due to the mature vegetation and a wide range of habitats present in the area, over 100 native and exotic bird species have been recorded at the ANBG.

Condition and integrity

Ongoing plantings and other development work continue to improve the area as a national collection of Australian native plants.

Appendix C

Management principle schedules in the EPBC Regulations relevant to the Australian National Botanic Gardens

The following table sets out the IUCN reserve management principles and the specific principles for IUCN protected area category IV, as prescribed in the EPBC Regulations. The table shows the section(s) of the management plan that address each principle.

EPBC Regulation schedules and management principles	Sections of management plan that address principles
Australian IUCN reserve management principles (Schedule 8)	
Part 1 General administrative principles	
1 Community participation	
Management arrangements should, to the extent practicable, provide for broad and meaningful participation by the community, public organisations and private interests in designing and carrying out the functions of the reserve or zone.	2.1 to 3.1 3.3 3.7 to 5.2 6.1 to 7.3 8.4 to 8.5
2 Effective and adaptive management	
Management arrangements should be effective and appropriate to the biodiversity objectives and the socio-economic context of the reserve or zone. They should be adaptive in character to ensure a capacity to respond to uncertainty and change.	1.1 8.1 8.4 to 8.5
3 Precautionary principle	
A lack of full scientific certainty should not be used as a reason for postponing measures to prevent degradation of the natural and cultural heritage of a reserve or zone where there is a threat of serious or irreversible damage.	1.1 2.1 8.1 8.3 8.5 to 8.6
4 Minimum impact	
The integrity of a reserve or zone is best conserved by protecting it from disturbance and threatening processes. Potential adverse impacts on the natural, cultural and social environment and surrounding communities should be minimised as far as practicable.	1.1 3.3 to 3.4 8.1 to 8.5

5 Ecologically sustainable use

If resource use is consistent with the management principles that apply to a reserve or zone, it should (if it is carried out) be based on the principle (the principle of ecologically sustainable use) that:	3.4 8.1 to 8.7
(a) natural resources should only be used within their capacity to sustain natural processes while maintaining the life-support systems of nature; and	
(b) the benefit of the use to the present generation should not diminish the potential of the reserve or zone to meet the needs and aspirations of future generations.	

6 Transparency of decision-making

The framework and processes for decision-making for management of the reserve or zone should be transparent. The reasons for making decisions should be publicly available, except to the extent that information, including information that is culturally sensitive or commercial-in-confidence, needs to be treated as confidential.	Legislative context and planning process 7.1 8.6 9.1
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7 Joint management

If the reserve or zone is wholly or partly owned by Aboriginal people, continuing traditional use of the reserve or zone by resident Indigenous people, including the protection and maintenance of cultural heritage, should be recognised.	Not applicable
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EPBC Regulation schedules and management principles

Sections of management plan that address principles

Part 2 Principles for IUCN Category IV, Habitat/species management area

5.01 A This clause sets out the management principles for a habitat/species management area (IUCN protected area management category IV).	
5.01 The reserve or zone should be managed primarily, including (if necessary) through active intervention, to ensure the maintenance of habitats or to meet the requirements of collections or specific species based on the following principles.	1.1 8.1 8.3 to 8.7
5.02 Habitat conditions necessary to protect significant species, groups or collections of species, biotic communities or physical features of the environment should be secured and maintained, if necessary through specific human manipulation.	1.1 8.1 8.3 to 8.7
5.03 Scientific research and environmental monitoring that contribute to reserve management should be facilitated as management.	1.1 2.1 8.1 to 8.5
5.04 The reserve or zone may be developed for public education and appreciation of the characteristics of habitats, species or collections and of the work of wildlife management.	1.1 7.1 8.4 to 8.5

5.05 Management should seek to ensure that exploitation or occupation inconsistent with these principles does not occur.	4.4
5.06 People with rights or interests in the reserve or zone should be entitled to benefits derived from activities in the reserve or zone that are consistent with these principles.	7.1
5.07 If the reserve or zone is declared for the purpose of a botanic garden, it should also be managed for the increase of knowledge, appreciation and enjoyment of Australia's plant heritage by establishing, as an integrated resource, a collection of living and herbarium specimens of Australian and related plants for study, interpretation, conservation and display.	1.1 4.6 7.1

EPBC Regulation schedules and management principles	Sections of management plan that address principles
Schedule 7B Commonwealth Heritage management principles (r.10.03D)	
1 The objective in managing Commonwealth Heritage places is to identify, protect, conserve, present and transmit, to all generations, their Commonwealth Heritage values.	Significance of the ANBG Legislative context and planning process 1.1, 1.3, 2.1, Goal 7, Direction setting 7.1 Appendix C
2 The management of Commonwealth Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have a significant impact on their Commonwealth Heritage values.	Goal 3 3.1.9 and 8.6.3 1.1.9, 8.5.13 and 9.1.3
3 The management of Commonwealth Heritage places should respect all heritage values of the place and seek to integrate, where appropriate, any Commonwealth, State, Territory and local government responsibilities for those places.	2.2 7.1
4 The management of Commonwealth Heritage places should ensure that their use and presentation is consistent with the conservation of their Commonwealth Heritage values.	3.3 2.1 4.1 to 4.6 8.1 8.4 to 8.5
5 The management of Commonwealth Heritage places should make timely and appropriate provision for community involvement, especially by people who: <ul style="list-style-type: none"> (a) have a particular interest in, or associations with, the place; and (b) may be affected by the management of the place 	1.1 3.1 7.1
6 Indigenous people are the primary source of information on the value of their heritage and that the active participation of indigenous people in identification, assessment and management is integral to the effective protection of indigenous heritage values.	7.1

7 The management of Commonwealth Heritage places should provide for regular monitoring, review and reporting on the conservation of Commonwealth Heritage values.	1.1
	2.1
	4.6
	8.1
	8.4
	8.5
	9.1

Index

A

- Aboriginal and Torres Strait Islander people
 - and programs relating to the traditional use of Australian plants, 55
- access to ANBG
 - public transport, pedestrian and cycle paths, 59, 60
- access to biological resources and benefit-sharing, 21, 26, 72–4
 - acquisition of biological resources for ANBG collections, 73
 - actions, 73–4
 - aims, 72–3
 - definition of access to biological resources, 16
 - framework of international obligations relating to, 72
 - issues, 73
 - policies, 73
 - see also Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization
- acquisition of biological resources, 33
 - for ANBG collections, 73
- ACT Emergency Services Agency
 - and fire and other emergencies, 43, 99
 - and precinct response plan, 100
- ACT Government land
 - and ANBG boundaries, 102
- ACT Parks, Conservation and Lands
 - and precinct response plan, 100
- activities in ANBG
 - restrictions and prohibitions, 46, 47
- adaptive management strategies, 95
- adjacent lands, 102
 - actions, 102
 - aim, 102
 - issues, 102
 - policy, 102
- administration, 98
- advisory council or advisory committees
 - and implementation of management plan, 115
- aesthetic value of ANBG, 9, 23, 122
 - see also Commonwealth Heritage values of ANBG, Criterion E: Aesthetic characteristics
- alpine flora, 74
- Amendment of the National Capital Plan. Amendment No. 16 master plan for the ANBG and background report*: National Capital Authority 1996, 120
- ANBG development plan*: Lester Firth Associates 1985, 119
- ANBG development planning guide*: The Hassell Group 1992, 119
- ANBG management plan 2002–2008*: ANBG 2001, 120
- ANBG plan of management 1993–1998*: Australian Nature Conservation Agency 1993, 119–20
- angiosperms, 67, 68
- aquatic plants, 27
 - see also Convention on Wetlands of International Importance (Ramsar Convention)
- archives see Australian National Botanic Gardens (ANBG) library and archives
- Armillaria luteobubalina*, 32
- art collections, 81
- artistic interpretations of native plants, 45
- assessment of proposals, 109–12
 - actions, 110
 - aim, 109
 - impact of proposed actions, 109, 110
 - issues, 109
 - policies, 110, 111–12
- asset management, 105, 107
 - see also strategic asset management system; strategic forward planning schedule for maintaining assets and building new assets
- asset register, 101
- assets
 - security of, 101
- Atlas of Living Australia, 2, 67
- audio tours, 53
- Australian Biological Resources Study
 - Department of Sustainability, Environment, Water, Population and Communities, 36
- Australian Biological Resources Study (ABRS), 81
- Australian Capital Territory (Planning and Land Management) Act 1988*
 - and ANBG, 24
 - and Central National Area, 17

- Australian Cultivar Registration Authority
 - Incorporated (ACRA), 16, 31, 39, 67, 91
 - role of, 90
- Australian cultivars, 31
- Australian Federal Police
 - ex officio wardens, 100
- Australian IUCN reserve management
 - principles, 10, 19, 28, 29, 113, 125–6
- Australian National Botanic Gardens (ANBG), i, iii, 16
 - aesthetic values *see* aesthetic value of ANBG
 - assignment of to an IUCN category, 28–9
 - IUCN category (IV), 28, 29
 - boundaries *see* boundaries of ANBG
 - Commonwealth Heritage values of *see* Commonwealth Heritage values of ANBG
 - Commonwealth reserve
 - under *National Parks and Wildlife Conservation Act 1975*, 2
 - Commonwealth reserve under EPBC Act, i, iii, 2, 7
 - condition and integrity, 124
 - conservation values, 8
 - description, 3–6
 - education values, 8
 - functions and role, 2–3, 7, 89, 123
 - national and international roles, 89–91
 - future direction statement, 9–10
 - goals, iii–vi, 10
 - goal 1, 31–5
 - goal 2, 36–43
 - goal 3, 45–50
 - goal 4, 51–61
 - goal 5, 63–75
 - goal 6, 76–87
 - goal 7, 89–91
 - goal 8, 93–103
 - goal 9, 104–16
 - and key result areas, 15
 - history of, 123–4
 - pictorial, 83, 84
 - research into, 83
 - on the internet, 79–80
 - key planning documents for, 119–20
 - landscape of *see* landscape of ANBG
 - location of in relation to Canberra City
 - map, 6
 - management of, 28–9, 93
 - see also* Management Plan 2011–2021
 - management principle schedules in the EPBC Regulations relevant to, 125–8
 - mandate of, 93
 - mission, iii, 9–10
 - naming of, 123, 124
 - natural and cultural heritage values, 8
 - physical description, 124
 - purpose, 2
 - scientific values, 8
 - sectional structure of, 123, 124
 - significance, 7–9
 - site, 3, 39
 - map, 4
 - social values, 9
 - use and appreciation of, 45–61
 - values, 93
 - vision, i, iii, 9
 - website, 7, 79, 80, 85
 - and websites of environmental non-government organisations, 76, 77
- Australian National Botanic Gardens (ANBG) image collection, 83–6
 - access to, 84, 85–6
 - actions, 85–6
 - aims, 84
 - archival storage of, 85
 - collection management, 85
 - digitisation of physical media in, 85
 - and Disaster Management and Recovery Plan, 85
 - grants, sponsorship, monetary
 - bequests, donations, 84, 85
 - issues, 84
 - policies, 84–5
 - promotion of collection, 85
 - provision of services, 86
 - reciprocal use of images with holders
 - of other image collections, 85
 - source images for, 85
 - see also* Australian Plant Image Index (APII)
- Australian National Botanic Gardens (ANBG) library and archives, 8, 76, 81–3
 - access to, 82–3
 - acquisitions policy, 82
 - archival documents
 - and history of ANBG, 83
 - cataloguing methodology
 - assessment of, 83
 - collection management, 83
 - and Disaster Management and Recovery Plan, 83
 - lending restrictions, 82
 - library services, 83
 - rehousing of collections, 82, 83

- Australian National Botanic Gardens (ANBG)
Living Collection Database, 76
- Australian National Herbarium (ANH),
i, 2, 8, 16, 17, 66, 67–9
Accession Policy, 68
and Australian Cultivar Registration
Authority Incorporated, 91
collection of *see* development, management
and curation of the herbarium
collection; herbarium collection
and Convention on International Trade in
Endangered Species of Wild Fauna, 27
data from, 67
and Disaster Management and Recovery Plan, 83
establishment of, 123, 124
increased space for, 69
and Integrated Botanical
Information System, 18, 77
internship programs, 56
Loans and Exchange Policy, 68
plant enquiry and identification service, 69, 86
specimen loans and exchange program, 68
and voucher specimens, 31
- Australian National Herbarium Specimen
Information Register (ANHSIR), 76
- Australian National University (ANU)
and ANBG boundaries, 102
Life Sciences library, 82
and precinct response plan, 100
- Australian Network for Plant Conservation
(ANPC), 16, 36, 39, 76
- Australian Plant Breeders Rights Office, 16
- Australian Plant Census (APC), 64, 69, 76
- Australian Plant Image Index (APII),
16, 67, 69, 76, 77, 83, 84
curatorial standards, 85
grants, sponsorship, monetary
bequests, donations, 84
and Integrated Botanical Information System, 18
- Australian Plant Name Index (APNI), 69, 76
and Integrated Botanical Information System, 18
- Australian Public Service Values, 93
- Australian Seed Bank Partnership (ASBP), 36, 39, 71
- Australian Systematic Botany Society (ASBS), 76–7
- Australian Tree Seed Centre (ATSC), 75
- Australian Tropical Herbarium, 67
- Australia's Virtual Herbarium, 64, 69, 79
- avian seasonality
in ANBG, 41
- awareness raising
re plant conservation and environmental
sustainability issues, 38, 52, 60, 76
re role of ANBG, 36, 38, 45, 51, 57, 58, 59, 60, 67
re value of living collection, 73
- B**
- Banksia Centre, 123
- benefit-sharing *see* access to biological
resources and benefit-sharing
- benefit-sharing agreements re biological resources, 73
- bequest policy and program
development of, 98
see also grants, sponsorship, monetary
bequests, donations
- biocontrol, 37
- biodiversity
in ANBG
information on, 41
and climate change, 63, 74
definition, 16
education, 55
health and resilience of, 63
- biodiversity conservation, 3, 7, 9, 20, 26, 36, 63, 74
see also national biodiversity conservation agenda
- biodiversity data exchange, 78
development of national and
international standards for, 89
- biodiversity informatics, 64, 77–9
- biodiversity information
database of, 80
- Biodiversity Information Standards, 89, 91
- biodiversity science, knowledge
management and use, 63–87
see also goal 5: Increase knowledge of
Australian flora through outstanding
research activities; goal 6: Be the gateway
for knowledge about Australian plants;
plant biodiversity conservation
- biogeography *see* plant systematics,
biogeography and evolutionary research
- biological diversity
conservation of, 17
definition, 16
see also Convention on Biological Diversity (CBD)

- biological material
 - definition, 16
 - biological resources
 - access to, 16, 21
 - see also* access to biological resources and benefit-sharing
 - acquisition of, 33
 - definition, 16
 - bird feeding by visitors, 42, 43
 - bird species, native and exotic, at ANBG, 124
 - Black Mountain Tower
 - and precinct response plan, 100
 - bookshop, 46, 49, 103
 - born-digital images, 84
 - definition, 16
 - botanic databases, 78
 - Botanic Gardens Australia and New Zealand Incorporated (BGANZ), 16, 36, 39, 54
 - Botanic Gardens Conservation International (BGCI), 17, 91
 - botanical information resources
 - for internet delivery, 80
 - botanical information services, 86
 - Botanical Resource Centre, 57, 77, 86, 87
 - boundaries of ANBG, 102
 - management of, 42
 - building security, 100, 101
 - burials, including the scattering or other disposal of ashes, 48
 - bushfires *see* fire management; fire plan; integrated fire protection and control strategy
 - business management, 93–116
 - see also* goal 8: Grow as a national institution; goal 9: Demonstrate environmental best practice and sustainable management
- C**
- cadastral boundaries of ANBG
 - clarification of, 102
 - café, 46, 49, 103
 - Canberra Botanic Gardens, 123
 - Canberra Nature Park
 - ANBG and, 41
 - and ANBG boundaries, 102
 - climate change and, 42
 - CANBR Agreement, 17, 65, 66, 78
 - capital works and infrastructure, 104–7
 - actions, 106–7
 - aims, 105
 - issues, 105
 - policies, 105–6
 - reviews of health and safety aspects of, 100
 - and site development plan, 106–7
 - by third parties, 106
 - car parking facilities, 52
 - carbon footprint
 - minimisation of, 104, 108
 - census of garden beds, 34
 - census of the garden beds, 34
 - Central National Area (Canberra)
 - ANBG and, 17, 39, 40
 - Centre for Australian National Biodiversity Research (CANBR), 2, 17, 36, 37, 64–5
 - actions, 65
 - aim, 64
 - and ANBG, 59, 65
 - and ANBG image collection, 83, 84
 - and ANH, 2, 16, 67, 124
 - and biodiversity informatics, 77
 - and botanic databases, 76, 78
 - collaborations with universities and other scientific institutions, 56, 65
 - communications and collaborations with, 53
 - and conservation biology, 74, 75
 - financial administration, 97
 - functions, 64
 - health and safety workplace conditions, 98, 99
 - and international collaborations, 89, 90, 91
 - and internet, 79, 80
 - issues, 64–5
 - map – location of in relation to ANBG, 5
 - and plant taxonomy, 7
 - policies, 65
 - and staffing, 94
 - systematics and evolution program, 65
 - and volunteers, 51
 - website, 79
 - work experience placements, 96
 - see also* CANBR Agreement
 - Centre for Plant Biodiversity Research, 2, 17, 64
 - children
 - experiences for, 48
 - climate change, 2, 8, 27, 32, 35, 63

- and biodiversity, 63, 74
- biogeography of, 67
- and Canberra Nature Park, 42
- education, 55
- likely impacts of, 42, 100
- mitigation and adaptation, 63
- and remnant vegetation and wildlife
 - monitoring and management program, 41
 - see also* National Strategy and Action Plan for the Role of Australia's Botanic Gardens in adapting to Climate Change; United Nations Framework Convention on Climate Change
- climate change research
 - baseline taxonomic data and, 65
- collaborative conservation projects, 7
- collaborative research programs and projects, 66, 68, 71, 74, 75
- collection development, 34
- collection management, 35
- commencement and termination
 - [of management plan], 15
- commercial actions/activities
 - EPBC Act and, 46
 - lease/licence/permit for, 49, 50
 - proposals for, 49–50
- commercial filming, 49
- commercial image capture in connection with reporting news/events of the day, 50
- commercial operations, 48–50
 - actions, 50
 - aim, 49
 - issues, 49
 - policies, 49–50
- commercial photography, 49, 50
- Commonwealth Fraud Control Guidelines
 - and training of investigators, 100
- Commonwealth Gazette*, 18
- Commonwealth Heritage List
 - ANBG on, 7, 8, 23, 24, 39, 40
 - EPBC Act provisions for, 24
- Commonwealth Heritage management
 - principles, 25, 127–8
- Commonwealth Heritage Place, 25
- Commonwealth Heritage values
 - of ANBG, 23, 115, 121–2
 - Criterion B: Rarity, 23, 121
 - Criterion C: Research, 23, 121, 122
 - Criterion E: Aesthetic characteristics, 23, 121, 122
 - Criterion F: Technical achievement, 23, 121, 122
- Commonwealth reserve
 - access to biological resources in, 21
 - definition, 17
 - EPBC Act and control of actions in, 21
- Commonwealth Scientific and Industrial Research Organisation (CSIRO), 17
 - and ANBG boundaries, 102
 - and ANH, i, 16, 17, 102, 124
 - increased space for, 69
 - and CANBR, 2, 59, 64, 65, 102
 - financial administration, 97
 - health and safety workplace conditions, 98, 99
 - and CANBR Agreement, 17
 - and precinct response plan, 100
- Commonwealth Scientific and Industrial Research Organisation (CSIRO) Black Mountain Library, 81, 82, 83
- community engagement, iv, 2, 51
 - Friends of the Australian National Botanic Gardens and, 52
 - see also* goal 4: Engage communities in valuing and conserving Australia's natural and cultural heritage
- community learning, 56
- community submissions to management plan, 15
- compliance and enforcement
 - strategies and procedures
 - review of, 101
- Conference of Parties to the Convention on Biological Diversity
 - and Nagoya Protocol, 26
- conservation and horticulture, 37–9
 - actions, 38–9
 - aims, 37
 - issues, 37–8
 - policies, 38
- conservation biology/research, 74–5
 - actions, 75
 - aims, 74
 - issues, 74
 - policies, 75
- conservation of plant species, i, iii, iv, 9, 10
 - of endangered species, 2
 - of listed threatened species, 23

- and the living collection, 31
 - of rare and endangered native species
 - aquatic plants, 27
 - see also* biodiversity conservation; ex situ conservation; goal 2: Champion the conservation of Australian plants and the role of ex situ conservation in integrated conservation management; horticultural conservation program; in situ conservation; integrated conservation management
 - conservation policy
 - revision of, 75
 - conservation projects, 37, 38
 - see also* collaborative conservation projects; national priority conservation projects
 - conservation research, 37, 38, 74
 - seed, germplasm and associated mycorrhizal fungi, 39
 - conservation values, 8
 - contractual arrangements for commercial operators, 50
 - controlled actions, 22, 109, 110
 - Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention), 25, 27
 - Convention on Biological Diversity (CBD), 17, 26, 33, 36, 72, 89, 91
 - see also* Conference of Parties to the Convention on Biological Diversity
 - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 17, 23, 27, 33
 - exemptions from provisions, 23, 27
 - and loans and exchanges, 69
 - Convention on Wetlands of International Importance (Ramsar Convention), 25, 27
 - corporate and philanthropic support
 - for public programs, 54
 - cost recovery plan for certain services, 115
 - Council of Heads of Australasian Herbaria Incorporated (CHAH), 17, 69, 77, 91
 - Council of Heads of Australia's Botanic Gardens (CHABG), 17, 77, 89, 91
 - Council on Botanical and Horticultural Libraries, 81
 - cross-disciplinary collaborations, 35, 105
 - cryptogams, 67, 68, 123
 - cultivation
 - native plants in, 31
 - protection of rare and endangered species through, 8, 38
 - cultivation trials
 - of rare and endangered species, 2, 23
 - aquatic plants, 27
 - cultural heritage, 51
 - valuing and conserving, iv
 - see also* goal 4: Engage communities in valuing and conserving Australia's natural and cultural heritage
 - curation of the living collection, 31, 38
 - definition, 17
 - see also* development, management and curation of the living collection
 - curatorial standards, 35, 95
- D**
- database application development, 76
 - database of biodiversity information, 80
 - databases
 - development of, 39, 79
 - living collection, 34
 - see also* Australian National Botanic Gardens (ANBG) Living Collection Database; botanic databases
 - decision-making process and impact
 - assessment procedures, 111
 - department
 - definition, 18
 - see also* Department of Sustainability, Environment, Water, Population and Communities
 - Department of Sustainability, Environment, Water, Population and Communities
 - and ANBG, 3
 - Australian Biological Resources Study, 36
 - library of and ANBG library, 81, 82
 - Design Guidelines
 - review of, 40
 - development, management and curation of the herbarium collection, 67–9
 - actions, 68–9
 - aims, 68
 - issues, 68
 - policies, 68–9
 - development, management and curation of the living collection, 31–5

- actions, 34–5
- aims, 32
- issues, 32
- policies, 33–4
- see also* curation of the living collection
- Development Planning Guide, 106
- Dickson, Dr Bertram
 - and establishment of ANBG, 123
- digital image collection, 84
 - see also* born-digital images
- Director of National Parks, 18, 19, 20
 - and access to biological resources
 - and benefit-sharing, 72
 - and activities of Friends of the Australian National Botanic Gardens, 58
 - and ANBG, 3
 - and CANBR, 2
 - and CANBR Agreement, 17
 - and capital works and infrastructure, 105
 - and changes in ANBG landscape, 42
 - and commercial actions in ANBG, 46
 - and control of actions in Commonwealth reserves, 21, 46, 47, 48
 - and cost recovery plan for certain services, 115
 - and environmental impact assessment, 22
 - and fees and charges, 22, 46, 97
 - functions of, 20
 - re finances, 96
 - and implementation of
 - management plan, 114, 115
 - and lease or licence relating to land in Commonwealth reserve, 103
 - and management plans for Commonwealth reserves, 15, 25
 - and review of ANBG policies and operational procedures, 115
 - and taking of action not specified
 - in management plan, 113
 - and taking of action otherwise prohibited under EPBC Act, 33, 38, 42
 - and technical audit of management plan, 116
- Director of National Parks' Volunteer Policy, 58
- Disaster Management and Recovery Plan, 69, 83, 85
- diseases, 32, 35
 - threat to biodiversity, 63
- donations and bequests *see* grants, sponsorship, monetary bequests, donations

E

- eastern brown snake (*Pseudonaja textilis*), 41
- ecological communities
 - in ANBG
 - information on, 41
- ecological relationships, 37
- ecosystem conservation, 36
- ecosystem management, 36
- ecosystems
 - appreciation and understanding of, 3
 - see also* remnant ecosystem
- education (schools, community and outreach), 54–6, 123, 124
 - actions, 55–6
 - aims, 54
 - issues, 54
 - policies, 55
- education for sustainability activities, 108
- education presenters, 55
- education programs, 3, 51
- Education Section, 55
- education services (early years to Year 12), 56
- education values, 8
- educational activities and events, 46
- educational resources, 45
- Emergencies Act 2004* (ACT), 99
- emergency evacuation and closure procedures, 99
- endangered fauna and flora
 - international trade in, 17
 - see also* Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); rare and endangered native plant species
- endangered plant species
 - conservation of, 2
- energy and water efficiency measure
 - promotional material on, 108
- energy and water use, 108
- Environment Librarians Network, 81
- Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), 18, 20–4
 - and access to biological resources and benefit-sharing, 26, 72, 73
 - acquisition of biological resources for ANBG collections, 73

- and ANBG, i, iii, 2, 3, 7, 16, 20
 - and appointment of staff as rangers or wardens, 100
 - assessment and approval provisions, 109, 110
 - and Australian IUCN reserve
 - management principles, 19, 28
 - and commercial actions, 46, 48, 72
 - and Commonwealth reserves
 - capital works and infrastructure in, 105
 - control of actions in, 21
 - establishment of, 17
 - fees and charges, 22, 46, 97
 - and lease or licence relating to land in, 103
 - management of, 14
 - and taking of action otherwise prohibited under, 21, 33, 37, 38, 42, 99
 - compliance with/breaches of, 101
 - department responsible for, 18
 - and Director of National Parks, 18, 19, 20
 - functions of re finances, 96
 - and environmental impact assessment, 22
 - and flora and fauna protection, 23
 - and heritage protection, 23–4
 - and killing, injuring, taking, trading, keeping or moving a member of a native species except in accordance with a management plan, 32, 37, 41
 - and management plans, 15, 21, 37, 113
 - purpose and content of, 24–6
 - objects, 20
 - penalties for breaches of, 24
 - policy and procedures and, 33
 - Chapters 2–4, 22
 - Part 13, 23, 32, 33, 38, 41, 42
 - Part 13A, 23
 - Part 15, Division 4, 17
 - s.303CC, 23, 72
 - s.303CD, 23, 72
 - s.303DD, 23, 72
 - s.3245(4)(a), 25
 - ss.341A–341ZH, 24
 - s.348, 28
 - s.354, 21, 32, 33, 37, 41, 46, 48, 72, 99, 105, 113
 - s.354A, 21, 32, 33, 37, 41, 46, 48, 72, 99, 105, 113
 - s.355, 21
 - s.355A, 21
 - s.356, 115
 - s.356A, 19, 22, 46, 47, 84, 97, 115
 - s.358(2), 103
 - s.366, i, 21
 - s.367(1), 24
 - s.367(3), 28
 - s.368, 15, 21
 - s.368(3), 25
 - s.370, 15
 - s.392, 100
 - s.514A, 18, 20
 - s.514C, 20, 96
- Environment Protection and Biodiversity Conservation Regulations 2000, 18
- and access to biological resources and benefit-sharing, 26, 72, 73
 - acquisition of biological resources for ANBG collections, 73
 - and capital works and infrastructure in Commonwealth reserves, 105
 - and control of actions in Commonwealth reserves, 21, 46
 - and fees and charges, 22
 - and IUCN category (Australian IUCN reserve management principles), 28
 - management principle schedules in relevant to ANBG, 125–8
 - policy and procedures and, 33
 - and prohibition on taking animals and plants into ANBG, and cultivating plants in ANBG, except with approval of the Director, 32, 37, 41
 - and research, 41
 - schedules and management principles, 125–8
 - Part 8A, 21, 72, 73
 - r.10.03D, 127–8
 - r.12.06, 41
 - r.12.06(1), 21
 - r.12.06(2), 46
 - r.12.10, 41
 - r.12.11, 105
 - r.12.19, 46
 - r.12.23, 46
 - r.12.23A, 46, 47
 - r.12.30A, 46
 - r.12.31, 46
 - r.12.32, 46
 - r.12.33, 46
 - r.12.41, 46
 - r.12.55, 46
 - Schedule 7B, 127–8
 - Schedule 8, 19, 28, 29, 125–7
 - Schedule 12, 22
- environmental best practice, vi
- see *also* goal 9: Demonstrate environmental best practice and sustainable management

Environmental Education Centre, 123

environmental impact assessment
EPBC Act and, 22

environmental impact assessment
matters and considerations, 112

environmental impact of ANBG
developments and operations
audit of, 108–9

environmental management system, vi, 107, 107–9
actions, 108–9
aim, 108
audit, 100
issues, 108
policies, 108

environmental monitoring stations
and microclimate interpretation, 60

environmental performance, 104

Environmental Reform (Consequential Provisions) Act 1999, 16, 20

environmental sustainability
and curation of living collection, 38
holistic strategic systems approach to, 108

environmental weeds
eradication/control of, 36, 38

environmentally responsible
management practices, 108

ethnobotany
definition, 18

Eucalyptus macrorhyncha, 3, 124

Eucalyptus mannifera ssp. *maculosa*, 124

Eucalyptus rossii, 3, 124

evaluation tools, 53

evolutionary research *see* plant systematics,
biogeography and evolutionary research

ex situ conservation, i, iv, 10, 23, 27, 36, 39
definition, 18
see also goal 2: Champion the conservation
of Australian plants and the role of
ex situ conservation in integrated
conservation management

Executive Director (ANBG)
and implementation of management plan, 115

exhibition schedule, 53

exhibitions
temporary indoor and outdoor, 52, 53

external expertise, 95

external funding
for ANBG image collection, 85
for horticultural science research, 71

extreme weather events, 100
impacts of, 42

F

fauna
EPBC Act and protection of, 23
monitoring of, 41
see also endangered fauna and flora

fauna refuge
ANBG, 40

fees and charges
for access to and use of ANBG
image collection, 84, 86
business review of during life of
management plan, 115
EPBC Act and, 22, 46, 97
for parking, 47
for plant enquiry and identification service, 69, 86
for release of plant material, 73
revenue from, 96
for some education services, 55
see also schedule of charges

financial management *see* revenue
and financial management

fire management, 99
see also integrated fire protection
and control strategy

fire plan, 43

flora
appreciation and understanding of, 3
conservation of *see* conservation of plant species
EPBC Act and protection of, 23
see also endangered fauna and flora

Friends of the Australian National Botanic
Gardens, 7, 18, 52, 53, 57–8
actions, 58
activities, 57, 59, 60
policy on, 58
aims, 57
and Botanical Resource Centre, 86
and financial support for ANBG, 96, 97
issues, 57
objectives, 57
policies, 58

website, 58
functions *see* private functions
funding, 32, 96
 for implementation of management plan, 115
 for repairs, maintenance and replacement, 105
 see also external funding
fundraising, 97, 98

G

garden section plans, 34, 35
Gauba, Erwin
 and ANH, 123
Gazette see *Commonwealth Gazette*
gene bank, 8
genetic diversity of targeted groups
 of Australian flora, 65
genetic resources
 definition, 18
glasshouses, 35
Global Biodiversity Information Facility (GBIF), 67, 89, 91
Global Strategy for Plant Conservation
 (GSPC), 26, 36, 89, 91
goals, iii–vi, 10
goal 1: Manage the national botanic garden to
 showcase Australia's plants, iii, 10, 31–5
 outcomes, iii
 performance indicator, 31
 see also development, management and
 curation of the living collection
goal 2: Champion the conservation of Australian
 plants and the role of *ex situ* conservation in
 integrated conservation management, iv, 10, 36–43
 outcomes, iv
 performance indicators, 37
 see also conservation and horticulture;
 landscape of ANBG; remnant vegetation
 and wildlife monitoring and management
goal 3: Create an inspirational place for
 enjoyment and learning, iv, 10, 45–50
 outcomes, iv
 performance indicators, 45
 see also commercial operations;
 recreation and visitor management
goal 4: Engage communities in valuing and conserving
 Australia's natural and cultural heritage, iv, 10, 51–61
 outcomes, iv

performance indicators, 51–2
see also education (schools, community and
 outreach); Friends of the Australian National
 Botanic Gardens; interpretation; marketing
 the ANBG; public programs; volunteers
goal 5: Increase knowledge of Australian flora through
 outstanding research activities, iv, 10, 63–75
 outcomes, iv
 performance indicators, 63–4
 see also access to biological resources and
 benefit-sharing; Centre for Australian National
 Biodiversity Research (CANBR); conservation
 biology/research; development, management
 and curation of the herbarium collection;
 horticultural science/research; plant systematics,
 biogeography and evolutionary research
goal 6: Be the gateway for knowledge
 about Australian plants, v, 10, 76–87
 outcomes, v
 performance indicators, 77
 see also Australian National Botanic Gardens
 (ANBG), on the internet; Australian National
 Botanic Gardens (ANBG) image collection;
 Australian National Botanic Gardens (ANBG)
 library and archives; biodiversity informatics;
 plant identification and information services
goal 7: Facilitate and collaborate in national
 and international policy and practice to
 support the work of plant focused institutions
 and organisations, v, 10, 89–91
 outcomes, v
 performance indicator, 89
 see also national and international roles
goal 8: Grow as a national institution, v, 10, 93–103
 outcomes, v
 performance indicators, 94
 see also adjacent lands; health and safety;
 leases, licences and associated occupancy
 issues; revenue and financial management;
 security and law enforcement; staffing
goal 9: Demonstrate environmental best practice
 and sustainable management, vi, 10, 104–16
 outcomes, vi
 performance indicators, 104
 see also assessment of proposals; capital
 works and infrastructure; environmental
 management system; new activities not
 otherwise specified in this plan; plan
 implementation, monitoring and evaluation

grants, sponsorship, monetary bequests, donations
to ANBG image collection, 85
to ANBG image collection and to
Australian Plant Image Index, 84, 85
and funding for ANBG, 96, 97, 98
online donation system, 98
Greening Australia Community Seed Bank, 36
Growing Friends, 57
guided tours, 53, 60
guided walks, 57, 60
promotion of, 59
gymnosperms, 67

H

hazard reduction programs, 100
hazards to health and safety, potential, 98–9
health and safety, 98–100
actions, 100
aims, 99
issues, 99
policies, 99
of visitors, v, 98–9
herbarium collection, 8, 18, 23, 67
archival conditions, 68
archival standards, 68
definition, 18
images associated with, 84
records of computerised, 124
specialist collections, 67
see also development, management and
curation of the herbarium collection
Herbarium Information Standards and Protocols
for Interchange of Data (HISPID), 89
Herbarium Information Systems Committee, 89
herbarium outreach programs, 69
herbicides *see* pesticides or herbicides
or other poisonous substances
heritage protection
EPBC Act and, 23–4
heritage values *see* Commonwealth
Heritage values of ANBG
horticultural conservation program, 37
horticultural consultants, 34
horticultural corporate knowledge, 71
horticultural experimentation, 31

horticultural field data, 34
horticultural industry, 31
research and, 63
horticultural knowledge documentation
training workshops on, 71
horticultural practices, 9, 31, 34
horticultural research, iv, 2, 8, 9, 39
horticultural science technology, 36
horticultural science/research, 63, 70–1
actions, 70
aims, 70
issues, 70
policies, 70
horticultural technical advice and assistance
provision of, 71
horticultural trials, 2, 7
horticulture
use of in conservation of plants
and ecosystems, 38
see also conservation and horticulture;
recreational horticulture

I

impact assessment procedures, 110
see also decision-making process and impact
assessment procedures; environmental impact
assessment matters and considerations
implementation schedule, 114, 115
in situ conservation, 36
definition, 18
indexes of plant names and plant images, 2
information technology (IT)
ANH and, 53, 68
and data management, 77, 79
and library services, 83
see also internet
infrastructure *see* capital works and infrastructure
Integrated Botanical Information
System (IBIS), 18, 34, 76, 77–8
integrated conservation management,
iv, 10, 31, 36, 37, 38, 39
definition, 18
see also goal 2: Champion the conservation
of Australian plants and the role of
ex situ conservation in integrated
conservation management

- integrated fire protection and control strategy, 105
 - integrated pest management strategies, 35
 - integrated restoration ecology, 36
 - Internal Communication Plan, 95
 - review of, 96
 - International Agenda for Botanic Gardens in Conservation, 26
 - international agreements, 26–7
 - International Code of Nomenclature for Cultivated Plants, 90
 - international engagement, v
 - see also* goal 7: Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations
 - international standards and protocols
 - for botanical data exchange, 79
 - international trade in endangered species of wild fauna and flora, 17
 - see also* Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
 - International Treaty on Plant Genetic Resources for Food and Agriculture, 72
 - International Union for Conservation of Nature (IUCN), 19
 - reserve management principles, 14
 - see also* Australian IUCN reserve management principles
 - International Union for Conservation of Nature (IUCN) protected area category, 10, 14, 24, 25–6
 - assignment of ANBG to, 28–9
 - category IV, 28, 29, 126–7
 - International Union for Conservation of Nature (IUCN) zoning, 25–6
 - internet
 - access to library catalogue on, 81
 - ANBG image collection and, 83–4
 - ANBG on, 79–80
 - indexes of plant names and plant images on, 2
 - library resources on, 82
 - use of, 2, 51, 53, 54, 80
 - websites of environmental non-government organisations, 76, 77, 80
 - see also* Australia's Virtual Herbarium; website
 - internet-based identification keys, 64
 - internet-based resources, 76
 - internship programs
 - ANH, 56
 - interpretation, 60–1
 - actions, 61
 - aims, 60
 - issues, 61
 - policies, 61
 - interpretation (including acronyms), 16–19
 - interpretation and information services, 52
 - interpretation and priority messages
 - schedule for, 60
 - interpretive and orientation signs, 60
 - interpretive tools, 38, 45, 52
 - introductory provisions, 15–27
 - invasive pests, 41, 43
 - threat to biodiversity, 63
 - investigators, 100
 - ISO 14001 environmental management standard, 104, 108
 - ISO 14064-1 greenhouse gas emissions reporting standard, 104, 108
- J**
- Jervis Bay annexe, 123
- K**
- key planning documents for ANBG, 119–20
 - key result areas (KRAs), 14–15
 - killing, injuring, taking, trading, keeping or moving a member of a native species except in accordance with a management plan
 - prohibition on, 32, 37, 41
 - Kiosk, 123
 - knowledge *see* plant information and knowledge
 - knowledge management *see* biodiversity science, knowledge management and use
- L**
- labelling *see* plant labelling
 - landscape change, 2
 - landscape degradation
 - threat to biodiversity, 63
 - landscape design, 7, 34, 45

- landscape developments, 40
 - landscape of ANBG, 7, 9, 23, 32, 34, 35, 39–40
 - actions, 40
 - aim, 39
 - issues, 39–40
 - policies, 40
 - law enforcement *see* security and law enforcement
 - learning experiences *see* education
 - (schools, community and outreach);
 - recreational and learning experiences
 - leases, licences and associated occupancy issues, 103
 - action, 103
 - aim, 103
 - issues, 103
 - policies, 103
 - leases, licences or permits for commercial
 - actions/activities, 49, 50
 - legislative context, 20–4
 - Legislative Instruments Act 2003*, 15, 21
 - licences *see* leases, licences and associated occupancy issues; permit or licence
 - listed threatened species
 - conservation of, 23, 70
 - see also* rare and endangered native plant species
 - living collection, 3, 7, 8, 9, 23, 72, 124
 - databases, 34
 - definition, 19
 - protection of, 34
 - records of computerised, 124
 - research on or monitoring of, 33
 - see also* Australian National Botanic Gardens (ANBG) Living Collection Database; collection development; collection management; curation of the living collection; development, management and curation of the living collection
 - Living Collection Policy, 31, 32, 33, 34, 35
 - living collection review, 34, 35
- M**
- maintenance programs, 107
 - reviews of health and safety aspects of, 100
 - mammal diversity
 - in ANBG, 41
 - management of ANBG, 28–9, 93
 - Management Plan 2011–2021, 114
 - background, 14–15
 - introductory provisions, 15–27
 - monitoring of implementation of, 96
 - see also* plan implementation,
 - monitoring and evaluation
 - review of, 114
 - technical audit of, 116
 - management plans
 - first, 14
 - second, 14
 - third *see* Management Plan 2011–2021
 - fourth
 - technical audit of third prior to, 116
 - EPBC Act and, 15, 21, 37
 - and control of actions in
 - Commonwealth reserves, 21
 - purpose and content of, 24–6
 - management principle schedules in the EPBC Regulations relevant to ANBG, 125–8
 - management principles *see* Australian IUCN reserve management principles; Commonwealth Heritage management principles; National Heritage management principles
 - maps
 - ANBG site, 4
 - location of ANBG in relation to Canberra Cioty, 6
 - location of Centre for Australian National Biodiversity Research in relation to ANBG, 5
 - marketing the ANBG, 52, 58–60
 - actions, 59–60
 - aim, 59
 - issues, 59
 - policies, 59
 - see also* target markets
 - Material Acquisition Agreement Policy and Procedures, 33
 - media plan, 60
 - media/media organisations, 50
 - memorial services, 48
 - microclimate interpretation, 60
 - Minister, 19
 - and environmental impact assessment, 22
 - and fees and charges, 22
 - and management plan, 15
 - and movement of voucher specimens, 23
 - morphological documentation of flora, 65
 - Mount Gingera annexe, 123

N

Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, 26, 72

national and international collaborations and forums, 89

national and international roles, 89–91
actions, 91
aims, 90
issues, 90
policies, 91

national biodiversity conservation agenda, 7

national biodiversity conservation priorities and curation of living collection, 38

national biodiversity policies and programs, 36

National Botanic Gardens, 123

National Capital Authority, 19
and ANBG, 24

National Capital Plan
landscape developments and, 40

National Heritage management principles, 25

National Heritage Place, 25

National Heritage values, 115

National Parks and Wildlife Conservation Act 1975, 19
and ANBG, 2, 16, 20

national priority conservation projects, 38

national safety net for plant species and associated ecosystems, 39

National Strategy and Action Plan for the Role of Australia's Botanic Gardens in adapting to Climate Change, 27

native birds
in ANBG, 8

native fauna
in ANBG, 3

native species
prohibition on killing, injuring, taking, trading, keeping or moving a member of a native species except in accordance with a management plan, 32, 37, 41

native vegetation
regeneration of in ANBG, 41

natural and cultural heritage values, 8

natural heritage, 51

valuing and conserving, iv

see also goal 4: Engage communities
in valuing and conserving Australia's
natural and cultural heritage

see also Convention Concerning the
Protection of World Cultural and Natural
Heritage (World Heritage Convention)

natural heritage management, 31–43

see also goal 1: Manage the national botanic
garden to showcase Australia's plants; goal
2: Champion the conservation of Australian
plants and the role of ex situ conservation
in integrated conservation management

new activities not otherwise specified in this plan, 113

aim, 113
issue, 113
policies, 113

New South Wales South Coast and Southern Tablelands
native and introduced vascular plant taxa, 86, 87

nursery and landscape supplies, 33

Nursery Industry Association of Australia, 90

O

*Occupational Health and Safety (Commonwealth
Employment) Amendment Act 2006*, 101

Occupational Health and Safety Committee, 98

online donation system, 98

online learning, 54, 55

online visitation, 36, 45, 51, 52, 53

Operational Manual, 110

orchid research, 74, 123

orchids, 35
living collection of, 123

organisation structure
review of, 95

outcomes
goal 1, iii
goal 2, iv
goal 3, iv
goal 4, iv
goal 5, iv
goal 6, v
goal 7, v
goal 8, v
goal 9, vi

outreach, 56

- see also* education (schools, community and outreach); herbarium outreach programs
- P**
- parking fees, 47
- Parks Australia, 18, 19
 - asset management system, 107
 - impact assessment procedures, 110
 - key result areas (KRAs), 14–15
 - Volunteer (Including Work Experience) Policy, 96
- Parks Australia Compliance and Enforcement Manual, 101
- Parks Australia Strategic Planning and Performance Assessment Framework, 14
- partnerships
 - with government and private sector, v, 37, 38, 39, 71, 74, 75, 76
 - see also* stakeholders and partnerships
- performance indicators
 - assignment of ANBG to IUCN category, 28
 - goal 1: Manage the national botanic garden to showcase Australia's plants, 31
 - goal 2: Champion the conservation of Australian plants and the role of ex situ conservation in integrated conservation management, 37
 - goal 3: Create an inspirational place for enjoyment and learning, 45
 - goal 4: Engage communities in valuing and conserving Australia's natural and cultural heritage, 51–2
 - goal 5: Increase knowledge of Australian flora through outstanding research activities, 63–4
 - goal 6: Be the gateway for knowledge about Australian plants, 77
 - goal 7: Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations, 89
 - goal 9: Demonstrate environmental best practice and sustainable management, 104
 - plan implementation, monitoring and evaluation, 114
- perimeter fence patrols, 100
- permit or licence
 - for exclusive or limited rights to carry on recreational activities and events, 47
- permits
 - for research on or monitoring of living collection, 33
- Pest Management Manual, 35
- pesticides or herbicides or other poisonous substances
 - use of, 34, 35
- pests, 32, 35
 - definition, 19
 - see also* integrated pest management strategies; invasive pests; vertebrate pests
- Phillips, M E (Betty)
 - and ANH, 123
- photographic collection, 123
- photographs illustrating ANBG's history, 81
- phylogenetic relationships of targeted groups of Australian flora, 65
- plan implementation, monitoring and evaluation, 114–16
 - actions, 115–16
 - aim, 114
 - issues, 114
 - performance indicator, 114
 - policies, 115
- planning documents *see* key planning documents for ANBG
- planning process, 15
- plant biodiversity conservation, 2, 7, 9
- Plant Breeders Rights, 67
- plant conservation, 16
 - and conservation of associated ecosystems, 36, 38, 39
 - see also* Australian Network for Plant Conservation (ANPC)
- plant conservation actions, 38
- plant display, i, iv, 3, 7, 9, 31
 - themes of, 32
 - see also* Thematic Planting Guide
- plant diversity
 - of living collection, i, 2, 7, 31, 32
- plant enquiry and identification service
 - ANH, 69, 86
- plant genera
 - registration of, 16
- plant heritage, 2
- plant identification and information services, 77, 86–7
 - actions, 87
 - aim, 86
 - issues, 86
 - policies, 86–7

- plant information and knowledge, i, iv, 2, 8, 9, 10, 32
 - dissemination of, 36
 - see also goal 5: Increase knowledge of Australian flora through outstanding research activities; goal 6: Be the gateway for knowledge about Australian plants; horticultural corporate knowledge
 - plant labelling, 34, 45
 - plant names and plant images
 - indexes of, 2
 - see also Australian Plant Image Index (APII)
 - plant records, 34
 - plant records management system
 - fully integrated and computerised, 34
 - plant systematics, biogeography and evolutionary research, 2, 63, 65–7, 67
 - actions, 69
 - aims, 68
 - issues, 68
 - policies, 68–9
 - plant taxonomy, 2, 7, 63, 65
 - postgraduate supervision, 3, 95, 96
 - post-visit evaluation of activities, 52
 - precinct response plan, 100
 - Principles and Common Policy Guidelines on Access to Genetic Resources and Benefit-sharing for Participating Institutions, 72
 - private functions
 - hiring of facilities for, 46
 - promotion see marketing the ANBG
 - propagation techniques, iii
 - propagation trials
 - of rare and endangered species, 2
 - proposed actions see assessment of proposals
 - Pryor, Lindsay
 - and establishment of ANBG, 123
 - and establishment of ANH, 123
 - Public Art Committee, 48
 - Public Art Master Plan, 48
 - Public Art Program, 45
 - public horticultural enquiries, 86
 - public programs, 38, 51, 52–4
 - actions, 53–4
 - aim, 52
 - issues, 52–3
 - policies, 53
 - promotion of, 59
 - Public Reference Herbarium, 86, 87
 - publications, 53
 - purpose and content of a management plan, 24–5
- R**
- Rain Forest Gully, 8, 23, 123
 - Ramsar Convention see Convention on Wetlands of International Importance (Ramsar Convention)
 - rangers or wardens, 101
 - powers and functions of, 100
 - rare and endangered native plant species, 23, 36, 74, 124
 - aquatic plants, 27
 - in cultivation, 121
 - international trade in, 27
 - see also Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
 - see also Commonwealth Heritage values of ANBG, Criterion B: Rarity; endangered fauna and flora; listed threatened species
 - rare genotypes
 - preservation of, 8, 124
 - rarity value of ANBG (conservation of rare and endangered plant species), 23, 121
 - records of infrastructure and assets
 - review of, 107
 - recreation and visitor management, 45–8
 - actions, 48
 - aim, 47
 - issue, 47
 - policies, 47–8
 - recreation programs, 3
 - recreational activities and events, 47
 - permit or licence for exclusive or limited rights to carry on, 47
 - recreational and informal learning activities and events
 - annual program, 48
 - recreational and learning experiences, 45
 - recreational horticulture
 - research and, 63
 - regional botanic gardens, 51, 54
 - Register of the National Estate
 - ANBG on, 40

- remnant ecosystem
 - maintenance of health of in ANBG, 41
 - remnant vegetation and wildlife monitoring and management, 40–3
 - actions, 42–3
 - aims, 41
 - issues, 42
 - policies, 42
 - repairs, maintenance and replacement
 - capital works and infrastructure, 107
 - funding for, 105
 - research, iv, v, 35
 - EPBC Regulations and, 41
 - and horticultural industry and recreational horticulture, 63
 - see also* Commonwealth Heritage values of ANBG, Criterion C: Research; conservation research; goal 5: Increase knowledge of Australian flora through outstanding research activities; horticultural science/ research; scientific research
 - research value of ANBG, 23, 122
 - restoration biology, 74
 - restoration ecology, 38, 63
 - revenue and financial management, 96–8
 - actions, 98
 - aims, 97
 - issues, 97
 - policies, 97
 - revenue generation, 46
 - review of ANBG policies and operational procedures, 115
 - risk assessment *see* strategic risk assessment
 - risk management
 - visitors, v
 - Risk Watch List, 98
 - Risk Watch Program, 100
 - Rock Garden, 123
- S**
- safe work practices
 - induction and training in, 98
 - safety *see* health and safety
 - safety incidents, 98
 - reporting, recording and reviewing of, 98
 - Schedule of Charges, 73, 97, 98
 - definition, 19
 - see also* fees and charges
 - school education programs, 3
 - see also* education (schools, community and outreach)
 - Scientific Associate Program, 94, 96
 - scientific research, 2, 8, 9, 39, 63
 - see also* research
 - scientific values, 8
 - security and law enforcement, 100–1
 - actions, 101
 - aims, 101
 - issues, 101
 - policies, 101
 - seed bank, 2, 8, 37, 38, 39, 74
 - see also* Australian Seed Bank Partnership (ASBP); Greening Australia Community Seed Bank
 - seed biology research, 74, 75
 - short title [of management plan], 15
 - showcasing Australia's plants, 3, 76
 - see also* goal 1: Manage the national botanic garden to showcase Australia's plants
 - site boundaries, 102
 - site development plan, 40
 - and capital works and infrastructure, 106–7
 - site risk assessment, 107
 - site security, 100, 101
 - Snake Management Policy and Plan, 43
 - snakes
 - monitoring and management of, 43
 - social media, 80
 - tools, 51
 - social networking tools, 51
 - social values, 9
 - Society for Growing Australian Plants, 90
 - species recovery programs, 2, 38
 - specimen loans and exchange program, 68
 - sponsored education positions, 55
 - staff, 19, 32
 - appointment of as rangers or wardens, 100
 - career advancement, 95
 - collaborative work practices, 94, 95
 - communication, 94, 95
 - and compliance and law enforcement, 101
 - specialist, 95

staff attraction, development and retention strategies, 95

staff capacity, vi

staff expertise, 2, 36, 38

staff safety training and awareness programs, 100

staff training and development, 95, 96

staffing, 94–6

- actions, 95–6
- aims, 94–5
- issues, 95
- policies, 95
- role of volunteers, 94

stakeholder groups

- use of ANBG for learning, 48

stakeholder participation, 51

stakeholders and partnerships, 89–91

- see also* goal 7: Facilitate and collaborate in national and international policy and practice to support the work of plant focused institutions and organisations

strategic asset management system, 100

strategic forward planning schedule for maintaining assets and building new assets, 107

strategic risk assessment

- re health and safety, 100
- see also* site risk assessment

structure of management plan, 14–15

Students Volunteer Botanical Internship Program, 3, 96

succession planning for biodiversity informatics program, 79

succession planning strategies, vi

succession replacement plan (trees), 35, 39, 40

superb fairy wren (*Malurus cyaneus*), 41

sustainability activities

- education for, 108

Sustainability, Environment, Water, Population and Communities portfolio

- ANBG and, 96

sustainability principles, 104, 108

- and ANGB landscape, 39

sustainable management, vi

- see also* goal 9: Demonstrate environmental best practice and sustainable management

sustainable use

- definition, 19

systematics *see* plant systematics, biogeography and evolutionary research

T

taking animals and plants into ANBG, and cultivating plants in ANBG, except with approval of the Director prohibition on, 32, 37, 41

target markets, 58–9

taxonomic data, baseline

- and climate change research, 65

Taxonomic Databases Working Group, 89

taxonomy *see* plant taxonomy

teachers/groups leaders

- satisfaction, 52
- surveys, 52

technical achievements

- value of ANBG in relation to, 23, 122
- see also* Commonwealth Heritage values of ANBG, Criterion F: Technical achievement

termination *see* commencement and termination [of management plan]

tertiary learning, 56

Thematic Planting Guide, 31, 32, 33, 34, 35

tourism industry

- and marketing of ANBG, 59, 60

tourist destination

- ANBG as, 59

translocation, 37, 38

tree health, 35

tree landscape, 39

- succession management plan for, 40
- succession strategies for, 39

tree management strategy, 35

U

United Nations Framework Convention on Climate Change, 27

University of South Australia

- longitudinal visitor study, 45–6

unwanted plant materials, 33

use and appreciation of ANBG, 45–61

- see also* goal 3: Create an inspirational place for enjoyment and learning; goal 4: Engage communities in valuing and conserving Australia's natural and cultural heritage

V

- vegetation restoration works, 2
- Vehicle Movement, Parking and Gate Policy, 107
- vehicular traffic, 107
- vertebrate pest management strategy, 42
- vertebrate pests, 32, 34, 35, 41, 42, 43
- visitation to ANBG, 36
- Visiting Scientist Program, 96
- visitor centre, 52, 53
- Visitor Code, 46
 - review of, 48
- visitor experience, 45, 47
- visitor impact on ANBG, 45
- Visitor Information Centre, 123
- visitor management *see* recreation and visitor management
- visitor orientation methods
 - review of, 53
- visitor safety, v, 98–9
- visitor satisfaction, 45, 46, 48, 51
- visitor services and facilities, 46, 52
- visitor studies
 - to inform future planning, 115
- visitor surveys, 45, 48, 51, 52
- visitors, 7, 52
 - bird feeding by, 42, 43
 - health and safety of, v
 - safety information for, 100
- volunteer education presenters, 55
- volunteer guide activities, 52, 53, 57
- Volunteer Policy, 58
- Volunteer (Including Work Experience) Policy Parks Australia, 96
- Volunteer Program, 96
- volunteer projects and programs, 51, 57, 58, 83, 94, 96
- volunteer-run plant identification services, 57
- volunteers, 57, 58
 - and image collection, 85
 - and library services, 81, 83
 - see also* Friends of the Australian National Botanic Gardens
- vouchers/voucher specimens, 8, 23, 31, 34, 67, 69
 - definition, 19

W

- wardens *see* rangers or wardens
- waste production, 108
- Water Management Strategy, 107
- website, 79, 80
 - and ANBG image collection, 85
 - monitoring of performance of, 80
 - visitors to, 7
 - see also* internet
- weddings, 46, 50
- weed control programs, 42
- weeds, 42
 - see also* environmental weeds
- white-browed scrub wren (*Sericornis frontalis*), 41
- white-winged chough (*Corcorax melanorhamphos*), 41
- wildlife
 - definition, 23
 - monitoring of, 41, 43
 - see also* remnant vegetation and wildlife monitoring and management
- wildlife habitat
 - ANBG, 40, 41, 42
 - conservation of, 41
- wildlife management practices, 41
- wildlife specimens
 - regulation of movement of, 23
 - regulation of trade in, 23
 - see also* Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- work environment, 93
- work experience placements, 55, 96
- workplace culture, 93, 94, 95
- World Heritage Convention *see* Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention)



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