AUSTRALIAN SEEDBANK PARTNERSHIP

Safeguarding Australia's Flora
through a national network of native plant seed banks

BUSINESS PLAN 2011-2020

A program of The Council of Heads of Australian Botanic Gardens Inc.

This business plan was prepared for the Australian Seed Bank Partnership, a program of The Council of Heads of Australian Botanic Gardens Inc (ABN 58 153 442 365). The Secretariat for the Partnership is supported by the Director of National Parks, which is a statutory agency responsible for the Australian Government's protected area estate.

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Foreword

Plant genetic diversity is central to a large number of economic, ecological and social activities and its conservation is a global obligation. The Australian Seed Bank Partnership is an ambitious long term strategy to safeguard Australia's flora in the face of changing climates and other threats to its unique plant communities and landscapes. The Partnership brings together Australia's leading botanical institutions, seed scientists and conservation and restoration experts to collaborate in the collecting and banking of native seed for conservation, as well as developing enabling technologies and sharing the body of knowledge required to strengthen Australia's capacity to restore and connect landscapes and ecosystems through seed-based restoration.

The work of the Australian Seed Bank Partnership makes significant contributions to such international efforts as the Millennium Seed Bank Partnership at the Royal Botanic Gardens Kew. In addition, the work of the Partnership contributes to the implementation of the Strategic Plan for Biodiversity 2011-2020 and achieving the Aichi biodiversity targets, as well as targets outlined in the *Global Strategy for Plant Conservation*; all important initiatives of the Convention on Biological Diversity.

The Australian Seed Bank Partnership program is a commitment by The Council of Heads of Australian Botanic Gardens Inc. to actively support the implementation of *Australia's Biodiversity Conservation Strategy 2010-2030*, contribute to research outcomes for the 2011 *Strategic Roadmap for Australian Research Infrastructure* and take a coordinated approach to building a national safety net for Australia's plant species through *ex situ* conservation that will provide us with options for the future use of these plants.

Stephen Forbes (Chairperson)
The Council of Heads of Australian Botanic Gardens Inc. (CHABG)

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1 INTRODUCTION

The *National Strategy and Action Plan for the Role of Australia's Botanic Gardens in Adapting to Climate Change* (Council of Heads of Australian Botanic Gardens 2008), supported in principle by the Natural Resource Management Ministerial Council, identified seed banks as part of Australia's biodiversity safety net and as having a key practical role in assisting with on-ground biodiversity recovery and management.

Michiel van Slageren and Micah Visoiu processing seed from collections made in Tasmania (Photo: Andrew McRobb, RBGKew)

The Australian Seed Bank Partnership, governed by The Council of Heads of Australian Botanic Gardens Inc., is a strategic response to a range of threats to biodiversity. The Partnership aims to ensure future access to Australia's diverse native botanical resources under present and changing climates. This will be achieved by helping deliver and sustain a national network of native plant seed banks across Australia and working to bridge the knowledge gap in seed science to support conservation and restoration activities. In addition, these actions will enable the sustainable use of plant diversity.

Seed banking and research about Australian flora undertaken by the Partnership includes crop wild relatives and native plants with economic potential; it does not address agricultural seed banking. The Partnership is the link between global conservation efforts (Global Strategy for Plant Conservation (CBD 2011) and the Millennium Seed Bank Partnership) and local efforts (on-ground restoration and advice).

This document outlines an ambitious 10 year (2011-2020) business strategy for the Australian Seed Bank Partnership to facilitate knowledge development and support landscape conservation and restoration programs through a national network of native seed banks and associated seed science. The plan builds on the successes of initiatives in the previous ten years, in particular, the Australian Seed Conservation and Research (AuSCar) network[1] in association with the international Millennium Seed Bank Partnership (MSBP), Greening Australia's Florabank and Australian Network for Plant Conservation's conservation training and capacity building program.

[1] The AuSCaR network involved a series of bilateral partnerships between Australian states, the Northern Territory and the international Millennium Seed Bank Project, now known as the Millennium Seed Bank Partnership (MSBP). The MSBP invested around AUD$12 million in Australian conservation outcomes from 2001-2009. This investment was matched by AUD$10million from Australian partner organisations. The AuSCaR network has evolved into the Australian Seed Bank Partnership, which is a national conservation seed banking and research collaboration.

Work with *Banksia montana* in Western Australia has provided a testing ground for translocating plants from high to low altitudes and bodes well for the future of the species under a changing climate (Photo: Department of Parks and Wildlife, Greg Freebury)

Through these efforts, the Partnership will make a significant contribution to *Australia's Biodiversity Conservation Strategy* 2010-2030 (Natural Resources Ministerial Council 2010) by bridging gaps in science knowledge that will assist the public, private and community sectors to restore degraded and/or fragmented landscapes and improve ecological connectivity; thereby improving the condition of our national conservation estates. The partnership will also contribute to research outcomes and provide enabling for research through its collections; all of this will support the Australian Government's 2011 *Strategic Roadmap for Australian Research Infrastructure* (DIISR 2011).

The plan outlines activities and investments to build a comprehensive *ex situ* conservation collection of Australian plants, increase our knowledge of the seed biology, as well as germination and seed storage requirements of these plants and initiate strategies for sharing this knowledge widely to guide their conservation and on-ground restoration practices for maintaining and re-establishing ecosystem function and building resilience to changing climates in Australian landscapes. Furthermore, the work will act as an insurance policy for society against the loss of plant diversity nationally, including the provision of potential benefits which could have been gained from wild plant diversity and its sustainable utilisation.

This business plan outlines the nature of our business by:

- Providing a background and rationale for conservation seed banking in Australia and describing the anticipated broad outcomes and outputs from the Partnership's work (section 2).
- Outlining the governance of the Australian Seed Bank Partnership (section 3)
- Describing the vision, business aim, goals and guiding principles for the work of the Australian Seed Bank Partnership (section 4).
- Presenting the Partnership's 10 year national program of work and outcomes (section 5).
- Describing the priority initiatives that form part of the Partnership's program of activities to address national priorities (section 5).
- Providing information on the financial management of the Australian Seed Bank Partnership (section 6).
- Outlining the Partnership's broad approaches to communication (section 7) and evaluation and reporting (section 8).

Research by Griffith University increased understanding of seed storage and germination requirements of Australian wild limes. This has helped to secure these species for their conservation and economic value (Photo: Kim Hamilton)

2 NATURE OF OUR BUSINESS

2.1 Rationale for conservation seed banking in Australia

Seed banking involves the collection, storage and sustainable use of seeds for plant conservation and associated research. It includes both long-term seed storage (conservation seed banking) and shorter-term storage of quantities of seed to supply restoration projects (restoration seed banking). Both approaches to seed banking are fundamental to integrated biodiversity conservation and restoration in Australia.

Conservation seed banking efforts from members of the Australian Seed Bank Partnership have been significant in assisting the Australian Government to fulfil its major international obligations under the Convention on Biological Diversity and more specifically, the *Strategic Plan for Biodiversity 2011-2020* and the Aichi targets, as well as the Convention's *Global Strategy for Plant Conservation* (GSPC). The work of the Partners is contributing to the GSPC's objectives of understanding, documenting and recognising plant diversity and ensuring plant diversity is urgently and effectively conserved. Moreover, it contributes to the GSPC 2020 targets focusing on conservation and restoration such as Targets 4 and 8 which specify a minimum of 15% of each ecological region or vegetation type be secured through effective management and/or restoration, with at least 75% of threatened plant species in *ex situ* collections and at least 20% of those available for recovery and restoration programmes. Furthermore, *Australia's Biodiversity Conservation Strategy 2010-2030* (Natural Resources Ministerial Council 2010:21-22) recognises that *ex situ* conservation methods, such as seed banks, provide an important insurance against biodiversity loss.

These biological collections are also an enabling technology for research and support understanding of the variability of Australia's plant diversity, increase understanding of genetic diversity and the relationships between organisms and their functional role in ecosystems. The Australian Government's *2011 Strategic Roadmap for Australian Research Infrastructure* (DIISR 2011) highlights that networked biological collections are required to collect, store and distribute biological resources in a secure and accessible form. These collections are recognised for their innovative approach to the conservation and sustainable utilisation of diverse genetic resources which supports the preservation of natural and crop biodiversity. Furthermore, these collections provide underpinning information for numerous research challenges.

Dr Phil Ainsley recording data about threatened plants in coastal South Australia (SA Seed Conservation Centre)

Seed banking is the principal tool in *ex situ* conservation providing safe and efficient storage of wild plant genetic diversity, as well as being a major tool and knowledge base to support *in situ* management of plant species and communities. Knowledge of how to develop, manage and efficiently utilise *ex situ* collections is critical to the long term success of ecological restoration of the fragile Australian landscape. The combination of *ex situ* capacity and seed research means being well equipped to tackle the restoration of damaged ecosystems, re-establish vital ecological services, mitigate the impacts of climate change, and help safeguard wild plant diversity in Australia. Furthermore, it will provide opportunities for innovation and adaption offered by plant diversity to deal with such large environmental challenges as food security, water scarcity through diverse and resilient catchment forest, loss of biodiversity in the wild (species reintroduction) and changing climates (drought, salt tolerance, disease resistance and invasive species). Without a coordinated national approach to seed banking, Australia will risk further loss of plant species and communities resulting in the loss of faunal habitat and ecosystem services that benefit Australian society now and in the future.

2.2 Role of the Australian Seed Bank Partnership

Members of the Australian Seed Bank Partnership are combining their collecting and research efforts to create a network of seed banks, rather than a central repository. These combined efforts assist with risk management, and enable the development and use of regional expertise and a cost effective response to safeguarding Australia's flora and achieving security for Australia's wild plant diversity and increasing understanding of ways to enable its sustainable use. Over the next 10 years, the key outputs and outcomes from the Partnership's efforts will be:

Outputs and Outcomes

1. A comprehensive store of wild native plant seeds and genetic resources for conservation risk management and insurance against the loss of wild plant diversity.
2. Increased information and understanding of the unique reproductive biology and ecology of native plants supporting integrated conservation and ecosystem restoration programs.
3. Research knowledge which enhances understanding of seed handling and storage leading to improved seed conservation practices.
4. An online knowledge portal, built on national standards, capturing seed biological information from key relevant information systems. This resource will support policy and planning, conservation management and restoration, to guide research development.
5. Knowledge sharing supporting economic development of native biological resources e.g. the nursery and horticultural industry, native seed industry and Australian farmers.
6. Strengthening of research collaborations, scientific exchanges and conservation actions with a range of collaborators including research communities, environmental agencies and organisations, business and industry, and local community-based organisations (e.g. Landcare).

Understanding seed biology will help to restore diversity in Australia's rich landscapes (Photo: Bindi Vanzella)

7. Capacity building in science and technology development through training the next generation of plant conservation and restoration practitioners.
8. Coordinated and collaborative efforts increasing the overall efficiency of seed collecting and banking activities and reducing costs and unnecessary duplication.
9. Contribution to achieving global plant conservation targets as part of national and international initiatives and obligations under the Convention on Biological Diversity.

3 ABOUT US

3.1 Who we are

The Australian Seed Bank Partnership draws on the expertise of Australia's leading botanic gardens, herbaria, state environment agencies and academic institutions, as well as non-government organisations (Table 1). Our work focuses on securing Australian flora in *ex situ* seed collections, enhancing our understanding of seed biology to improve conservation and restoration outcomes and training and building capacity in Australia for seed science and banking.

Table 1: Members of the Australian Seed Bank Partnership

Australian National Botanic Gardens*[2]
Botanic Gardens and Parks Authority (WA)*
Botanic Gardens of Adelaide (SA)*
Brisbane Botanic Gardens Mount Coot-tha (Qld)* supported by Griffith University and the University of Queensland
George Brown Darwin Botanic Gardens (NT)*
Royal Botanic Gardens and Domain Trust (NSW)*
Royal Botanic Gardens Board (Vic)*
Royal Tasmanian Botanical Gardens (Tas)*
Australian Network for Plant Conservation
Threatened Flora Seed Centre, Department of Parks and Wildlife (WA)
Greening Australia
Royal Botanic Gardens Kew

3.2 Governance

The Australian Seed Bank Partnership is the principal conservation program and a trading name of the Council of Heads of Australian Botanic Gardens Inc. (CHABG). CHABG is an Association incorporated under the Australian Capital Territory's *Association Incorporation Act 1991* (ABN 58 153 442 365; Association number A05197). It is a charitable organisation endorsed by the Australian Taxation Office and endorsement as a deductible gift recipient under subdivision 30-BA of the *Income Tax Assessment Act 1997* is provided for the operation of a public fund on the Australian Government's register of environmental organisations. The Australian Seed Bank Partnership is supported by financial and in-kind contributions from partner organisations, and through restricted funds from Trust and Foundation grant programs. CHABG is working to increase support from philanthropic and public donations.

The Australian Seed Bank Partnership program is carried out in collaboration with the partner organisations listed in Table 1. Other organisations (our Associates) assist with individual projects which contribute to the overall program. The program is managed by a National Steering Committee and coordinated by the National Coordinator provided by the Director of National Parks (through the Australian National Botanic Gardens). Secretariat support for the Partnership and the National Steering Committee is also provided by the Australian National Botanic Gardens.

Simone Dudley preparing seeds for germination to produce seedlings for species recovery work (Photo: Department of Parks and Wildlife)

[2] Those Partners marked with an * have a representative on the management committee of The Council of Heads of Australian Botanic Gardens Incorporated

4 NATIONAL VISION

4.1 Vision, mission and goals

Our vision is a future where native plant diversity is valued, understood and conserved for the benefit of all.

We will achieve this vision through our mission ofundertaking a national effort to conserve Australia's native plant diversity through collaborative and sustainable seed collecting, banking, research and knowledge sharing. By doing this, we will ensure future access to Australia's native plant resources under the present and changing climate and other biodiversity threats.

Goals:

The Australian Seed Bank Partnership safeguards Australia's flora by:

1. Collecting and storing seed in secure seed banks as long term insurance against loss of plant diversity.
2. Conducting research to improve both conservation and restoration outcomes from seed banking.
3. Developing national standards and improving capacity to enable conservation and restoration of biodiverse and resilient ecosystems.
4. Sharing knowledge and engaging the public, private and charity sectors, as well as community members, in the work of the Australian Seed Bank Partnership.
5. Securing and strategically managing our resources to strengthen and support the work of Australian Seed Bank Partnership to achieve its vision.

4.2 Business aim

Our business aim is to build and maintain a national *ex situ* seed collection of Australian flora and work collaboratively to generate basic and applied seed related information that is effectively managed and communicated to our stakeholders.

This aim is being achieved through research in seed science, biological interactions, and conservation. This is underpinned by our extensive collections of living seeds and plant materials. Research findings will be made accessible to the public through web based tools. Our research programs, dissemination activities and our local, national and international networks are fundamental to building and sharing our specialist knowledge to national and global communities.

4.3 Guiding principles

The broad principles guiding our work are:

1. National biodiversity priorities.
2. Conservation status of threatened species throughout Australia.
3. Building quality genetic and geographical representation within seed conservation collections.
4. Coordinating seed conservation activity for efficient and effective conservation and resource use.

The operational priorities guiding our work are:

5. Collecting species belonging to threatened ecosystems and ecosystems most at risk of changing climates.
6. Accounting for recalcitrant species (those plants with seed unable to be desiccated or stored using traditional seed banking practices).
7. Collecting and researching species identified for their value in revegetation, and those with economic potential in such industries as agriculture, nurseries and horticulture.
8. Increasing knowledge of those species within important ecological communities.
9. Training and extension work will underpin the implementation of the national program.
10. Risk management by duplicating seed collections at more than one facility.

5 OUR NATIONAL PROGRAM (2011-2020)

Our national program is organised around five goals and nine themes, each with identified strategies, actions, priorities and the key outcomes to guide the implementation of the program.

We believe it is important to set targets, in the form of defined outcomes, for our work so that we can maintain focus and ensure our work is relevant to the conservation and use of Australian flora. Our targets are based on the following criteria:

- They must be relevant to the nature of our business.
- They focus on relevant international and national policy including the Convention on Biological Diversity's *Strategic Plan for Biodiversity 2011-2020* and the Aichi targets, as well as the *Global Strategy for Plant Conservation* (CBD 2011) and the *Australia's Biodiversity Conservation Strategy 2010-2020* (NRM Ministerial Council 2010).
- They must be ambitious, while being achievable with appropriate management and resources.
- They are measurable and transparent.

Our priorities:

We have prioritised four (4) projects to help us build a national safety net for Australia's plant species through ex situ conservation and to support our research which builds understanding of the seed biology of Australia's diverse flora.

The Knowledge Hub will be an accessible online resource providing essential information to support on-ground conservation and restoration activities (Photo: Carl Davies)

Seeds are stored at low temperatures to ensure they remain viable for as long as possible (Photo: Simone Cottrell)

1000 Species Project

Bringing together our expertise across the country, the Partnership will collect and store seed from native plant species which are valued for their endemic, endangered or economic significance. The project will initially target 1000 species which are not currently secured in Australia's conservation seed banks. The second phase of this project involves improving the genetic diversity of species collected and banked during the first phase by collecting from more populations of the same plant species.

The new seed collections will become an insurance policy safeguarding Australia's native flora, provide a resource to build knowledge and understanding about Australian flora and can be used to propagate plants and re-establish populations if needed in the future.

Australian Seed Bank Online

Through their seed collecting and research activities, our Partners have captured large quantities of information on phenology (the leaf, flower and fruiting periods), ecology, abundance, seed morphology, germination/dormancy requirements and storage characteristics. There is an urgent need to bring this data together because it is vital knowledge for helping community groups and government and non-government organisations in their important work in restoring Australia's diverse landscapes.

The Partnership is collaborating with the *Atlas of Living Australia* to build an accessible online seed information resource. This virtual seed bank will be a useful resource for researchers, students, restoration and conservation practitioners and community groups, as well as the

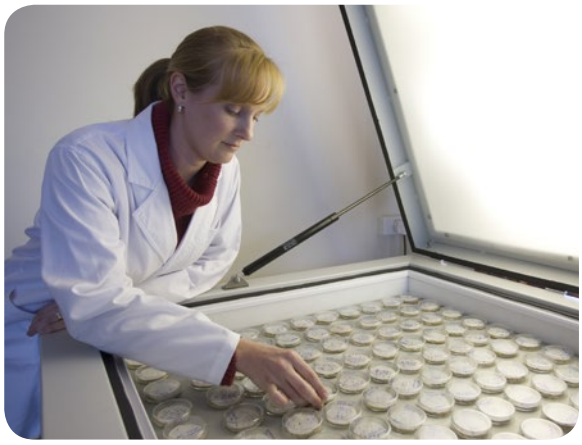
horticultural and nursery industry. Following the development of the Australian Seed Bank Online, the Partners will be working with community groups and non-government organisations to develop a citizen science program to engage community members in the work of the Partnership and support the conservation of Australia's rich flora.

Restoring Diversity Program

The Restoring Diversity Program will bridge gaps in our knowledge of practical ways to germinate plant species from Australia's diverse vegetation communities. Rehabilitation and restoration work is rarely able to put back many important native plants because they are difficult to propagate. Through increasing our understanding of seed biology and using this knowledge to restore the rich diversity in degraded landscapes these plant species and communities will be able to be more resilient to disturbance and safeguard habitat for native animals. The important knowledge generated by this research will directly help rehabilitation practitioners, landowners and community groups in their efforts to restore and reconnect habitats throughout Australia.

Plants on the Precipice Project

Mountain plant species are one of the most extinction-prone groups of plants under a warming climate scenario. This project will focus on the alpine and montane regions of Australia and draw on the Partnership's diverse research expertise to secure vulnerable species in these extreme environments by collecting and banking seed for long term conservation and undertaking research to determine which species are resilient to changing climates and identifying those that offer potential for restoration or translocation.



Dr Leanne Pound tests the ability of seeds to germinate at different temperatures in an effort to understand the potential impact of climate change on threatened native plants (Photo: SA Seed Conservation Centre)

Heather Sweet, Anne Phillips and Joe McAuliffe seed collecting in the Australian Alps (Photo: ANBG)

Theme	Strategies	Actions	Timelines	Outcomes by 2020
Goal 1: Collecting and storing seed in secure seed banks as long term insurance against loss of biodiversity				
Conservation collections	A. Prioritise seed collection from regions and ecosystems most likely to be impacted by climate change, invasive species and other threats (incl. listed threatened species). B. Increase the number of species held in conservation seed collections and extend the breadth of genetic diversity (taking in disjunct populations) covered by existing collections. C. Continue to implement the program for duplicating conservation seed collections at the Millennium Seed Bank and in long-term storage facilities in Australia.	1. Commence the collecting component of the following initiatives: i. 1000 Species Project (Phase 1) aims to collect 1000 significant taxa which are not currently secured in Australian conservation seed bank collections. ii. 1000 Species Project (Phase 2) aims to improve the genetic representation of species collected and banked during Phase 1. 2. Collecting programs for priority ecosystems vulnerable to changing climates and biosecurity issues, including alpine and mountain regions, arid zones, rainforest and coastal communities. 3. Initiate a national program to build a comprehensive *ex situ* collection of native orchid taxa (and associated mycorrhiza). 4. Establish a national program of seed production orchards for rare and threatened plants.	2011-2018 2013-2020 2014-2020 2015-2020 2014-2020	At least nine conservation seed banks across Australian jurisdictions working in partnership to deliver *ex-situ* plant conservation. 100% of banked seeds processed and screened against standard germination protocols. 75% of Australia's listed threatened species, excluding orchids, collected and stored securely for future use. Implementing strategy for *ex situ* conservation of native orchid species. Seed collected for at least 20% of Australia's threatened orchid species and stored securely for future use. 80% of Australia's listed threatened species stored in seed banks are collected from more than one population (where existing). Representative seed collections secured for keystone species from at least 75% of Australia's nationally listed ecological communities at risk from climate change or other major threats. All conservation seed collections duplicated in at least one other secure long-term seed storage facility. 20% of seeds collected from species identified as priorities for ecological restoration programs.

Theme	Strategies	Actions	Timelines	Outcomes by 2020
Goal 2: Conducting research to improve both conservation and restoration outcomes from seed banking				
Research	D. Develop research projects to improve identified conservation and restoration outcomes from seed banking: - Seed quality and genetic variation for high priority species - Seed storage behaviour for unstudied/ recalcitrant species - Germination protocols - Seed production in volume - Seed enhancement technology - The implications of climate change on seed germination E. Conduct research on species for use in reintroduction and restoration activities to improve the conservation status of threatened flora and fauna.	5. Develop and implement a national seed research program: i. Prioritise research on collections made during the 1000 Species Project to overcome dormancy challenges. ii. The Restoring Diversity Program will bring together research disciplines to develop holistic approaches to understorey restoration using seed science, especially in Australia's degraded agricultural landscapes, to improve production and biodiversity outcomes. This program will involve on-ground trials to improve approaches to restoration and reintroduction. iii. Draw on the Partnership's research expertise to secure vulnerable species in extreme environments by identifying genotypes that are likely to withstand changing climates. The priority ecosystems include alpine and montane areas, arid zones, rainforest and coastal flora (threatened by rising sea levels). iv. Undertake research on seed production areas to determine best practice approaches and ensure the maintenance of genetic variability.	2015-2020 2012-2020 2014-2016 2014-2020	The number of species with germination problems solved has been increased by 30%. Identified and researched the seed ecology and biology of 100 species considered most threatened by climate change to assist recovery. Established germination protocols for 100 banked species identified for restoration / revegetation activities to enable recovery. Improved storage protocols for 100 species that prove to be short-lived and/or have responded poorly to storage protocols for orthodox seeds. Create seed production orchards for 100 of the most highly threatened or most sought after species for restoration to better enable recovery. Genetic delineation of seed collection zones for seed farming completed for 10 framework species per year. Genetically appropriate mother stock sourced from within provenance boundaries for each species. Seed production facilities for priority native species established in at least 5 sites across Australia Seed enhancement technology developed for 25 germinable/ framework species per year. Seed enhancement technology to ensure at least 50% of seeds delivered to restoration sites emerge and produce an established seedling. Methods of broad-acre mechanised seed delivery developed for precision sowing of diverse native seeds into a soil medium suitable for seedling establishment. Establish at least 5 field research stations including controlled environment facilities in representative habitats.

Theme	Strategies	Actions	Timelines	Outcomes by 2020
Goal 3: Developing national standards and improving capacity to enable conservation and restoration of biodiverse and resilient ecosystems				
National Standards development and capacity building (beyond the Partnership)	F. Promote the use of appropriately sourced and verified collections for reintroduction, restoration and recovery programs in association with state and territory environmental/ conservation agencies, botanic gardens and the restoration sector.	6. Initiate and refine the development of a national data standard for seed collection and associated research data in collaboration with the Atlas of Living Australia. 7. Contribute to the development and dissemination of guidelines to improve the sustainability of the seed collection and supply process in the community and industry-based restoration sectors. 8. Support the delivery and implementation of training and capacity building programs to encourage the adoption of best practice guidelines among the community and industry-based restoration sectors.	2011-2013 2014-2015 2012-2020	The Partnership actively contributed to the development of national standards and guidelines for seed collection and supply. Adoption of the industry code of practice and certification/ accreditation program by the restoration sector(s).
	G. Support the development of sustainable business practices for restoration	9. Support the development and implementation of accredited training for sustainable business practices for restoration. 10. Develop and deliver training courses in seed conservation at tertiary and community levels in Australia.	2015-2020 2012-2020	Implementation of sustainable business practices throughout the restoration sectors.
Training and capacity building (within the Partnership)	H. Succession planning to support the maintenance of expertise and capacity of the partner organisations for research, seed conservation and restoration.	11. Develop capacity for in-house training in the Partnership. 12. Provide opportunities for new researchers to undertake training with the Royal Botanic Gardens Kew's Millennium Seed Bank.	2013-2020 2013-2020	Use of appropriate up to date technologies to maintain or increase capacity and knowledge for seed science and conservation in Australia.

Theme	Strategies	Actions	Timelines	Outcomes by 2020
Goal 4: Sharing knowledge and engaging the public, private and charity sectors, as well as community members, in the work of the Australian Seed Bank Partnership.				
Data management	I. Develop a comprehensive online national seed information database, using agreed national standards, for scientists, seed practitioners and the public using Australian Seed Bank Partnership data	13. Develop policies, procedures and standards for the maintenance and dissemination of data and information. 14. Facilitate the development of the Knowledge Hub for Seed Banking in collaboration with the *Atlas of Living Australia*, a national seed information system that draws on the databases of Australia's conservation seed banks. 15. Implement a program of knowledge brokering to break down data exchange barriers and enable exchange of data on seed storage and viability. 16. Collaborate with relevant agencies to develop an online photo library of seeds and germinating plants to support research, restoration and conservation within Australia	2011-2013 2011-2012 2011-2013 2013-2016	The use of national standards for seed information. Accessible national integrated online seed information and image database. Breaking down of data exchange barriers between sectors.
Communication	J. Communicate research findings in appropriate and accessible forms for industry and communities. K. Raising the profile of native seed banks in biodiversity conservation and the roles of the members of the Partnership.	17. Facilitate the preparation and implementation of the branding of the Australian Seed Bank Partnership. 18. Develop and implement a Communication and Marketing Strategy. 19. Develop and manage the Partnership web site.	2011 2012 2011-2020	Australian Seed Bank Partnership is seen as foremost experts in managing ex situ collections, seed research and creating information to support on-ground conservation and restoration works in Australia.
Engagement	L. Engage communities with the Australian Seed Bank Partnership.	20. Design and launch a citizen science program to engage communities in the work of the Partnership.	2015-2020	Strengthening understanding of the role of seed banking in biodiversity conservation.

Theme	Strategies	Actions	Timelines	Outcomes by 2020
Goal 5: Securing and strategically managing our resources to strengthen and support the work of the Australian Seed Bank Partnership to achieve its vision				
Resources and capacity building	M. Assess the Partnership's seed research capability and identify skill sets to research issues surrounding seed conservation.	21. Conduct an audit of the Partnership's capabilities and member facilities and produce an on-line directory of seed research capacity in the partnership which is updated annually. 22. Research shortcomings in the national knowledge and skill set to inform capacity and training programs.	2011 2014-2017	High level of capacity within the Partnership for seed conservation and germination work, that advances restoration practices.
Resources and security	N. Sustain a viable network of distributed seed banks. O. Secure sufficient resources to enable plant biodiversity scientific research, particularly in seed science biology and ecology.	23. Develop a national program of work for the Partnership. 24. Undertake a fundraising feasibility study before launching the national program. 25. Develop and implement a fundraising strategy to support the Partnership's national program. 26. Implement a communication strategy to raise the national and international profile of the Partnership and its program.	2010-2011 2011 2011-2020 2011-2020	Ongoing seed collecting and research which contributes to safeguarding Australia's flora and is creating knowledge and understanding that supports on the ground conservation and restoration works. Well maintained network of conservation seed banks in Australia. A sustainable effective partnership for plant conservation.
Resources Succession planning	P. Develop collaborative projects with universities and co-supervise seed related post-graduate research.	27. i. Consult with universities with seed science capabilities to build a strategic program of postgraduate seed science research addressing national priorities and building the seed science capability of Australia for biodiversity conservation. ii. Integrate postgraduate research, where appropriate, in project development as part of the Partnership's national program.	2013-2020 2013-2020	High level of capacity within Australia for seed science and germination work, that advances conservation and restoration practices.

Theme	Strategies	Actions	Timelines	Outcomes by 2020
Overarching the work of the Australian Seed Bank Partnership				
Contributing to national and international biodiversity priorities	Q. In cooperation with the Australian Government, assist in the delivery of obligations to the Convention on Biological Diversity (esp. Global Strategy for Plant Conservation) and the objectives of Australia's Biodiversity Conservation Strategy 2010-2030.	28. Develop and implement an appropriate reporting method for the work of the Partnership to meet the national requirements for the CBD, in particular the GSPC. 29. Develop procedures for the Partnership for reporting via CHABG to the Standing Council under the Council of Australian Governments and other appropriate bodies. 30. Progress policy development relevant to the achievement of the goals of the Partnership. 31. Contribute to the identification of national research priorities in biodiversity conservation that involve native seed research.	2012 2012 2011-2020 2011-2020	Comprehensive store of wild native plant seeds for risk management and insurance that safeguards Australian flora and supports seed science research which guides conservation and on-ground restoration outcomes in Australia's diverse landscapes. Generation of relevant knowledge which improves on-ground conservation and restoration outcomes.

Graeme Errington and Leahwyn Seed, from the Australian Botanic Garden Mt Annan, making collections on Lord Howe Island (Photo: Ian Hutton)

6 FINANCIAL MANAGEMENT

The Australian Seed Bank Partnership is the conservation program and trading name of The Council of Heads of Australian Botanic Gardens Inc (CHABG). The CHABG Management Committee members are responsible for the financial reporting that gives a true and fair view of the financial position of CHABG Inc. and that complies with Accounting Standards Australia. This includes responsibility for the maintenance of adequate accounting records and internal controls that are designed to prevent and detect fraud and error, and for the accounting policies and accounting estimates inherent in the financial report. For specific details financial information on the Australian Seed Bank Partnership see the annual reports located at http://www.seedpartnership.org.au/about/reports.

The Australian Seed Bank Partnership program receives support from the Australian Government's Director of National Parks Statutory Agency (DNP). The DNP employs a National Coordinator for the program and provides an operational budget, facilities and services for the Secretariat through the Australian National Botanic Gardens. For the successful delivery of the outcomes outlined within this business plan, funds will be sought from government departments and agencies, which are already making substantial investments in biodiversity. A substantial proportion of funding will also come from private sources as the Partnership grows. The Council of Heads of Australian Botanic Gardens Inc. is maximising this potential source of funding through the establishment of a Public Fund that allows CHABG Inc. to receive and hold monies for the Partnership and operate under the provisions of the Income Tax Assessment Act enabling it to seek tax deductible donations.

Members of the Management Committee of CHABG Inc. represent Australia's major botanic gardens. These institutions currently invest around $117 million in managing *ex situ* collections (including seeds), horticulture, research, education and visitor services. In addition, Partnership member Greening Australia invests around $35 million/year in seed science and restoration activities in Australia.

The members of the Australian Seed Bank Partnership provide a range of in-kind support to the Partnership including scientific expertise, project management skills, and advice in fundraising, information management, promotion and marketing. A key role of the National Coordinator is to work with the members of the Australian Seed Bank Partnership to secure the necessary funds for operations and programs that will realise this business plan for the benefit of the wider Australian community.

AUD$	Income / funds	2011-2015
Secured resources:		
National Coordinator and Secretariat	Director of National Park Statutory Authority	750,000
1000 Species Project	Royal Botanic Gardens Kew (fieldwork fund) (£50k/yr for 3 years)	225,000
Australian Seed Bank Online (grant)	Atlas of Living Australia	10,000
Australian Seed Bank Online (in-kind)	Atlas of Living Australia	96,000
In kind contributions	Partnership Members	2,500,000
Subtotal		3,581,000
Financial requirements:		**2012-2017**
National Projects:		
i. 1000 Species (Phase 1)	Foundations, Philanthropic Trusts, Corporate Partnerships	2,175,000
ii. 1000 Species (Phase 2)	Government, Foundations, Philanthropic Trusts, Corporate Partnerships	7,200,000
iii. Restoring Diversity (Phase 1)	Government, Foundations, Philanthropic Trusts, Corporate Partnerships	2,500,000
iv. Plants on the Precipice Project (Phase 1)	Government, Foundations, Philanthropic Trusts, Corporate Partnerships	2,200,000
v. Australian Seed Bank Online (Phase 2)	Government & Corporate Partnerships	1,200,000
Total		**AUD$15,275,000**

7 COMMUNICATION

The Australian Seed Bank Partnership will use various communication tools to:

- raise awareness of the value of seed banking in safeguarding Australia's flora
- broaden understanding of the value of *ex situ* conservation and its role in integrated conservation management
- share research knowledge to bridge the gap between scientific research, policy development and conservation and restoration practices
- provide opportunities for information exchange about seed science and banking to build further expertise in Australia
- ensure ongoing involvement and commitment to national seed banking priorities by the Partnership members
- encourage investment and support of the Australian Seed Bank Partnership through informing existing and possible donors and funding bodies of the outcomes of the work of the Partnership
- increase engagement with the work of the Partnership.

Technique	Outline
Website	Communication portal for information on the Partnership, current initiatives, its achievements and a link to the Australian Seed Bank Online.
Print media	Targeted articles in local, regional and national media to inform the public about Partnership achievements.
Brochure	Informing stakeholders and targeting donors with information on the goals, activities and achievements of the Partnership.
Radio and television	An opportunity to draw on the experts within the Partnership and present targeted stories to raise awareness of the importance of seed banking, seed science and the work of the organisation and its individual partners.
Newsletter	Regular 'E' information bulletin to partners and stakeholders to update on activities and achievements.
Presentations at national and international forums	Informing the scientific and restoration communities about the work of the Partnership and breakthroughs with seed science and applied sciences.
Articles in national and international peer reviewed journals	Formally document and inform on the scientific achievements of the Partnership activities.
Articles in non-peer reviewed appropriate publications	Publishing papers and articles on the work of the Partnership to appropriate sectors including botanic gardens, restoration and conservation.
Working groups	This will provide opportunities for Partners and relevant stakeholders to critically discuss issues, priorities and guide project develop.
Targeted meetings with existing Partners, potential Associates and stakeholders	These strategic meetings will enable planning, reporting and building of relationships to support the work of the Partnership and achievement of its vision.

8 EVALUATION AND REPORTING

The Australian Seed Bank Partnership functions at a national strategic level and a state-wide tactical level. The national program involves Partners working on projects which contribute to achieving the Partnership's vision of a future where native plant diversity is valued, understood and conserved for the benefit of all (see section 5.0). A combination of strategies is required to monitor, evaluate and report on the Partnership's operations and achievements.

Goal(s)	Reporting Method(s)	Target(s)	Frequency
International reporting:			
1	Report on meeting targets outlined in the Strategic Plan for Biodiversity 2011-2020, including the Aichi Biodiversity Targets and Global Strategy for Plant Conservation targets	Secretariat for the Convention on Biological Diversity (CBD) Australian Government Botanic Gardens Conservation International Global Partnership for Plant Conservation	
1, 2, 3 and 4	National Report on measures taken to implement the Convention on Biological Diversity	Secretariat for the Convention on Biological Diversity through the Australian Government	5th national report due 2014
National reporting:			
1, 4	Director of National Parks Annual Report	DNP Statutory Agency and Australian Government	Annual
1, 2	State of the Environment Reporting (state, territory and national level)	Government departments and stakeholders	Every 5 years (national) and 3-5 years depending on the state/territory
Obligatory reporting:			
5	CHABG Inc. annual report(s)	ACT Government - Associations Incorporation Act 1991 Australian Charities and Not-for-profits Commission ASIC Australian Government Department of the Environment – Register of Environmental Organisations Australian Taxation Office	Annual
1, 2, 3, 4 and 5	Australian Seed Bank Partnership annual report	CHABG Inc., stakeholders and existing and potential funding bodies	Annual
1, 2, 3, 4 and 5	Project reporting	Funding bodies and CHABG Inc.	Annual[3]
Organisational reporting:			
1, 2, 3, 4 and 5	Corporate reporting (financial management, program and project management, national steering committee meetings/decisions)	CHABG Inc. and Partnership members	Quarterly

[3] Unless otherwise specified by funding body.

9 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: Commonwealth of Australia and Council of Heads of Australian Botanic Gardens.

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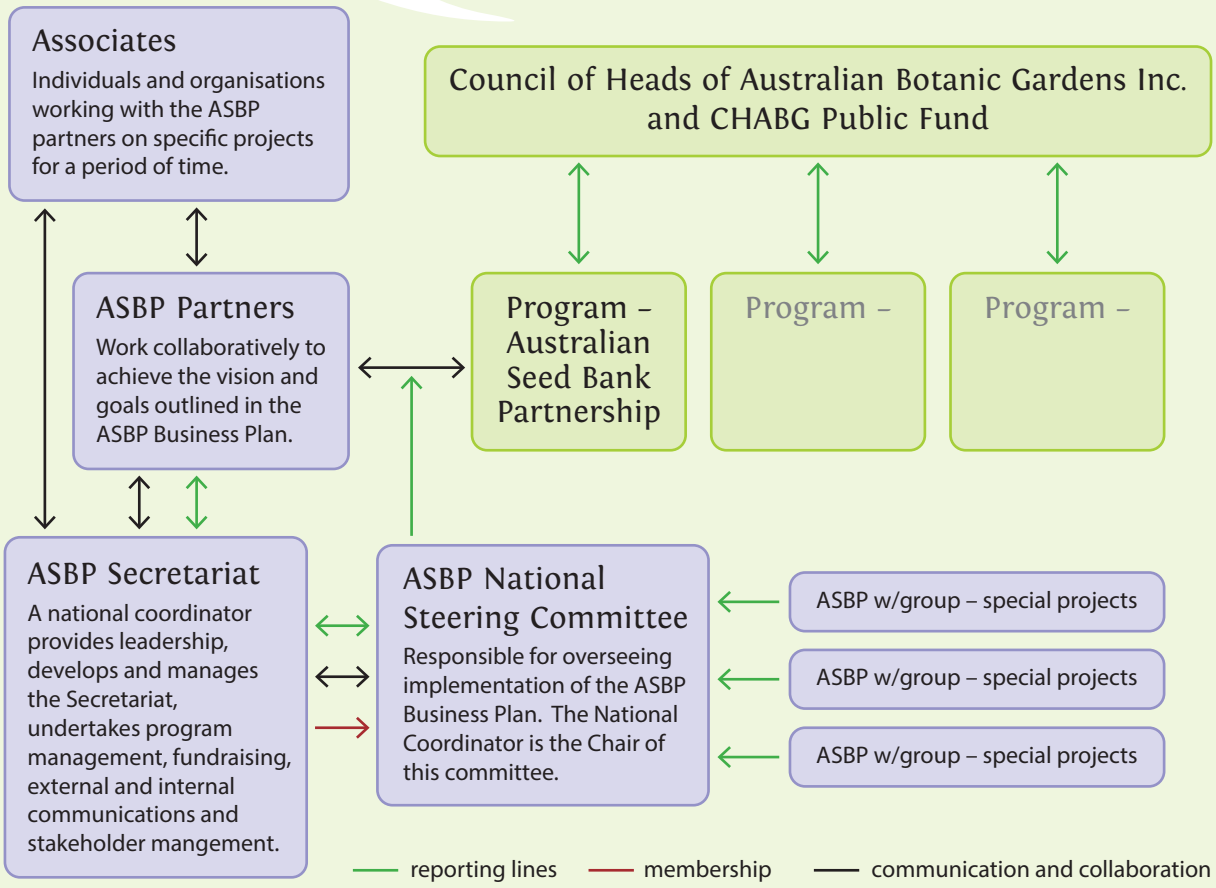
Offord, C.A. and Meagher, P.F. (2009) *Plant Germplasm Conservation in Australia: strategies and guidelines for developing, managing and utilising ex situ collections.* Canberra: Australian Network for Plant Conservation Inc.

Secretariat for the Convention on Biological Diversity (2010) *Global Strategy for Plant Conservation 2011-2020.* Available [online] http://www.cbd.int/gspc/strategy.shtml, accessed 11 February 2011.

Appendix 1: Management Structure of the Australian Seed Bank Partnership (ASBP)



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CHABG Inc. is a charitable institution, with deductable gift recipient status (item 1), and operates the Council of Heads of Australian Botanic Gardens Public Fund. CHABG Inc. is dedicated to supporting the protection, conservation and enhancement of Australian plants and their ecosystems. It collaborates with Australian botanic gardens and other institutions to support and carry out research, collaborate with integrated conservation management, promote knowledge sharing and education about plants and plant communities and provide a forum to promote the diversity of work undertaken by botanic gardens.

CHABG Inc. relies on support for the Australian Seed Bank Partnership Program and its other programs to achieve its vision of a future where native plant diversity is valued, understood and conserved for the benefit of all. Please help us to conserve Australia's unique flora and plant communities today and for the future. If you would like to contact us to discuss support you can provide, please call us on +61(0)26250 9473 or email us via coordinator@seedpartnership.org.au.