Australian Capital Territory

Nature Conservation (Draft Strategy) Approval 2013

Disallowable Instrument DI2013-211

made under the

Nature Conservation Act 1980, section 30(1) (Minister's powers in relation to draft nature conservation strategy)

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1 Name of instrument

This instrument is the *Nature Conservation (Draft Strategy) Approval 2013.*

2 Commencement

This instrument commences on the day after notification.

Note To the extent that they have not been disallowed under the *Legislation Act 2001,* the provisions of Schedule 1 of this instrument become the text of the nature conservation strategy for the territory. As soon as practicable after the provisions of Schedule 1 become the text of the strategy, the Minister must, in writing, fix a day when the nature conservation strategy is to commence (s32 *Nature Conservation Act 1980*).

3 Approval of ACT Nature Conservation Strategy

Under section 30(1) of the *Nature Conservation Act 1980* I approve the draft Nature Strategy entitled '*ACT Nature Conservation Strategy 2013-2023'* in Schedule 1 of this instrument.

Simon Corbell
Minister for the Environment and Sustainable Development
01 August 2013

ACT Government
Environment and Sustainable Development

ACT Nature Conservation Strategy 2013–23

Authorised by the ACT Parliamentary Counsel—also accessible at www.legislation.act.gov.au

Contents

Introduction

In a world where biodiversity is threatened and declining, the ACT remains a 'good news story' in terms of conservation outcomes. In 2007, the ACT was the only Australian jurisdiction to receive a World Wildlife Fund for Nature (WWF) triple-A rating for its nature conservation estate in terms of its rated comprehensiveness, extent and standard of management.

The ACT Nature Conservation Strategy 2013–2023 (the Strategy) builds on the achievements of the original 1997 strategy, which made significant progress in terms of enhancing the reserve estate, managing the recovery of threatened species and ecological communities, and putting in place frameworks to manage ecological threats to our biodiversity and aquatic ecosystems.

Building on these strong foundations, the new Strategy aims to enhance the resilience of natural areas at wider 'landscape scales'. The Strategy provides direction on how to better integrate and extend conservation efforts beyond reserves to include natural areas across a range of land uses and tenures, and cross-border, to ensure ecosystems remain healthy and well-managed. This approach will provide the best chance for natural ecosystems to adapt to expected longer term shifts in climate. Landscape-scale conservation will benefit from the broader involvement of rural landholders on whose properties significant remnants of native vegetation still exist.

A resilient, well-managed environment supports better health and wellbeing in our community. The Strategy has a range of actions to improve the opportunities for ACT residents to enjoy parks, reserves and open space as places for recreation, amenity, self-renewal and education. Embracing the idea of the 'Bush Capital', the Strategy suggests a range of programs to broaden the opportunities for our native biodiversity to flourish in urban areas, but in ways that will also provide benefits to people in a changing climate, such as providing more shade to cope with higher temperatures. The Strategy recognises that decisions about landuse are made under the *Planning and Development Act 2007.*

The Strategy will continue to support the ACT's diverse volunteer base. Volunteers put in tens of thousands of hours of unpaid work every year to help manage the ACT's natural areas. Looking into the future, it is particularly important to engage a new generation of younger Canberrans in conservation by encouraging and supporting programs for nature-based learning in the ACT's natural areas.

Overview

The ACT Nature Conservation Strategy 2013–23 outlines a vision for nature conservation in the ACT over the next decade for '*biodiversity rich, resilient landscapes stretching from the inner city to the mountains, where well-functioning ecosystems can meet the needs of people and the environment*'.

The ACT's large reserve estate encompasses 54% of the Territory's total area. Large, well-connected reserve areas to the south and west of Canberra have ensured upland ecosystems are already well protected. Pressures on the ACT's natural ecosystems remain greatest in the lowlands, where reserves are inadequately connected in some areas and native vegetation remnants on public and privately managed land are 'ecologically isolated', remaining vulnerable to threats including climate change (see Map 1).

The Strategy aims to strengthen the key foundational elements—connectivity, resilience, community capacities—of a long-term approach to build the adaptive capacity of natural ecosystems and people to a changing climate.

To more effectively manage biodiversity and native habitat within and between areas currently protected in the reserve system, the Strategy outlines a plan to create larger, more resilient landscapes across a range of tenures including urban areas, open space, reserves, rural lands and riverine corridors.

The Strategy supports continued implementation of the Namadgi and Tidbinbilla plans of management to ensure upland areas remain in good condition, and supports ongoing monitoring to understand the impacts of climate change on climate sensitive alpine ecosystems. Given the most significant conservation gains in the ACT can be achieved in lowland areas, the Strategy will focus on better managing threats to lowland reserves and connecting these areas with well-managed native vegetation remnants outside these areas.

Managing ecological values across different tenures in this way is consistent with the 'whole of landscape' approach that is becoming the standard for conservation planning across Australia (see Box 6).

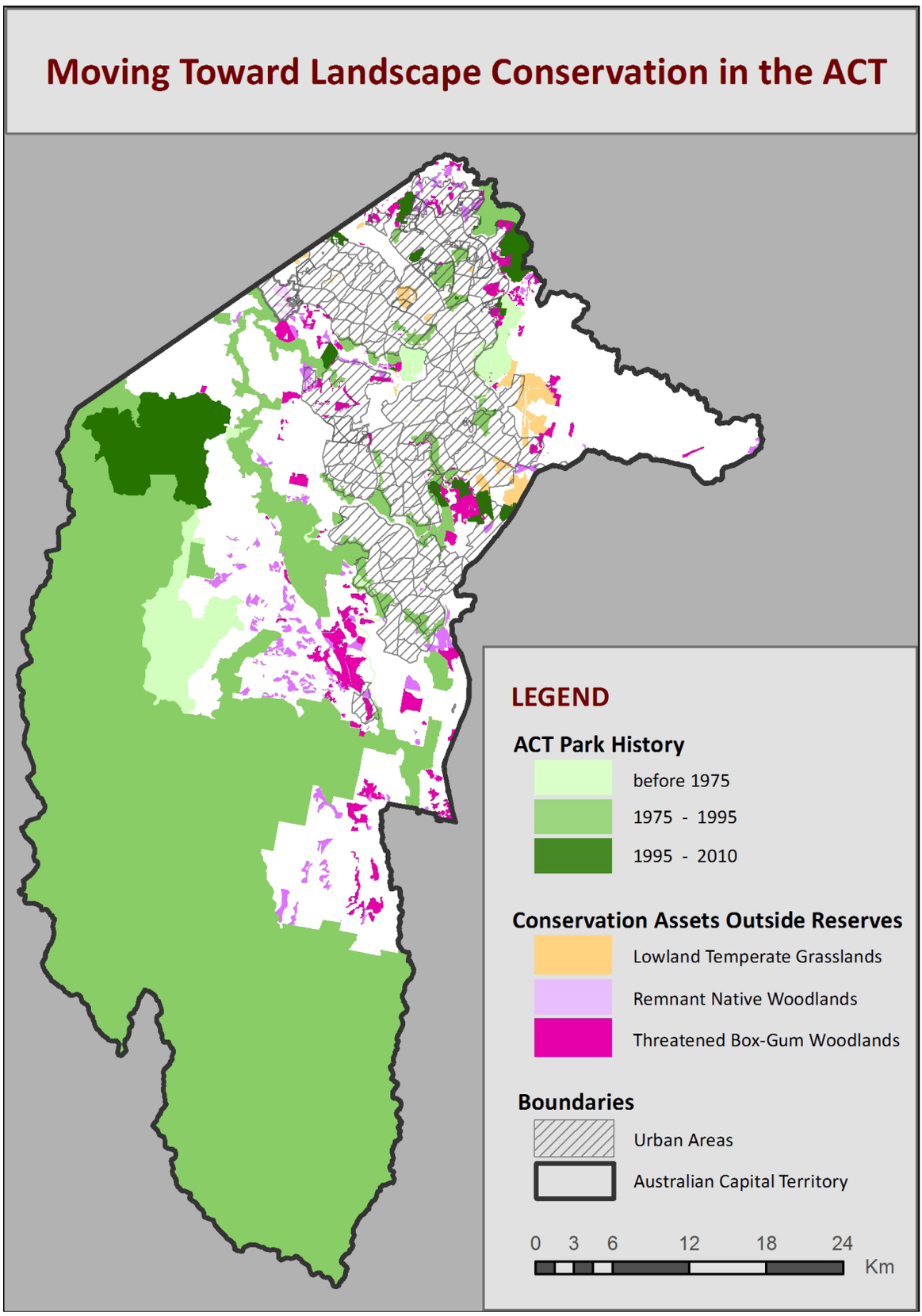
The Strategy has identified broad focal landscapes (see Box 1 and Map 2) in which robust conservation practices and climate change science will be used to identify where to prioritise enhancing habitat quality, extent and connectivity of native vegetation, and control weeds and pest animals to support restoration.

Box 1: Selecting focal landscapes

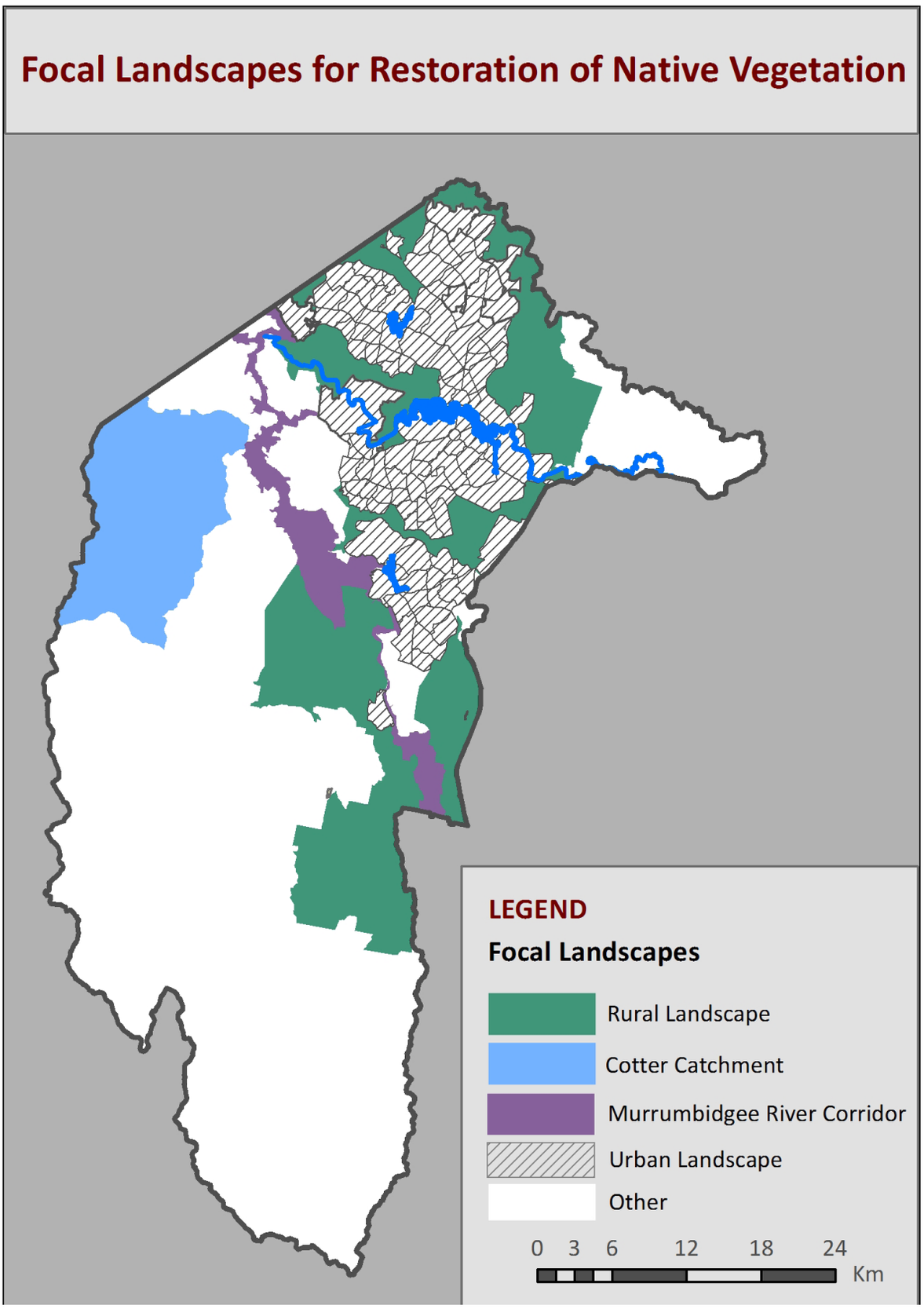
The Strategy identifies focal 'landscapes' (See Map 2) in which more targeted investment may contribute to conservation outcomes at the landscape scale. This initial 'spatial prioritisation' approach considered factors such as:

- conservation value, including for climate change adaptation
- degree of fragmentation and potential for connectivity and
- importance for catchment management.

Note: the terms 'rural' and 'urban' landscapes are general descriptors of the predominant current landuse within the landscapes. The use of these terms does not imply that land is reserved for these purposes, or that other landuses are not appropriate within these areas. The areas may change over time as decisions about landuse change are made under the *Planning and Development Act 2007*.



Map 1: Nature reserves in the ACT vary in their ecological values. Namadgi, the Cotter and Tidbinbilla were created for conservation, wilderness and catchment values. Lowland nature reserves were largely established for their landscape and amenity values (protecting the hills, ridges and buffers as prescribed under the Territory Plan). Post 1995, significant areas such as Jerrabomberra Wetlands, Mulligans Flat and a number of native grassland sites were reserved to protect a variety of threatened species and ecological communities. Despite these efforts, large remnants of nationally threatened box-gum woodland and other modified woodlands remain unprotected and unmanaged across public and private land. The Strategy will focus on better managing these remnants and other degraded areas through the landscape restoration approach outlined in Map 2.



Map 2: The ACT Government has used the most up-to-date conservation data to identify broad 'landscapes' in which more targeted investment may contribute to conservation outcomes at the landscape scale. Landscapes are a mix of reserves, rural leases and other tenures that contain significant native vegetation remnants with potential for restoration and connection. The Strategy identifies four landscape types where more fine-scale planning and on-ground actions will be guided by specific objectives for each landscape (see Section 2). Note: the terms 'rural' and 'urban' landscapes are general descriptors of the predominant current landuse within the landscapes. The use of these terms does not imply that land is reserved for these purposes, or that other landuses are not appropriate within these areas. The areas may change over time as decisions about landuse change are made under the *Planning and Development Act 2007.*

Table 1: Nature conservation strategy approach	
Vision: "Biodiversity rich, resilient landscapes stretching from the inner city to the mountains, where well-functioning ecosystems can meet the needs of people and the environment"	
Outcome 1: Native vegetation and biodiversity is maintained and improved. **Outcome 2: Landscapes are more resilient, including to climate change.** **Outcome 3: Community health and wellbeing is increased through use and appreciation of natural areas and 'green assets' in urban areas.** *Note: progress of outcomes will be measured against targets – see Table 2*	
Strategy 1: Enhance habitat connectivity and ecosystem function	
Actions	1. Develop baseline information on landscape function. 2. Undertake fine scale planning for habitat connectivity. 3. Enhance regional connectivity. 4. Assess conservation investment opportunities across public and privately managed lands in the ACT. 5. Fund priority landscape actions.
Strategy 2: Manage threats to biodiversity	
Actions	1. Implement ACT Weed Strategy (2009–19). 2. Implement Pest Animal Management Strategy (2012–22). 3. Manage total grazing pressure on ecosystem function in reserves. 4. Establish and implement ecologically appropriate fire regimes. 5. Implement improved catchment management to support aquatic ecosystems. 6. Develop and implement a migratory species action plan. 7. Develop and implement an ACT soils strategy.
Strategy 3: Protect species and ecological communities	
Actions	1. Manage the protected area estate. 2. Develop, implement and review action plans for threatened species and communities. 3. Restore and manage priority landscapes. 4. Identify biodiversity refugia under drought and climate change. 5. Monitor five priority ecosystems most vulnerable to threats. 6. Implement captive breeding programs and translocation programs. 7. Propagate and translocate threatened plants. 8. Establish seed banks and seed orchards.
Strategy 4: Enhance biodiversity value of urban areas	
Actions	1. Manage impacts of urban development on biodiversity. 2. Manage urban open space. 3. Enhance connectivity through urban areas. 4. Manage the urban edge. 5. Support urban landcare and ParkCare activities. 6. Manage and enhance green assets and infrastructure.
Strategy 5: Strengthen community engagement	
Actions	1. Support greater community involvement through volunteering. 2. Enhance and promote the use of citizen science. 3. Implement targeted community education campaigns on priority issues. 4. Build Indigenous engagement in the management of natural resources. 5. Encourage the involvement of youth in nature conservation. 6. Support appropriate recreational and tourism use of natural areas. 7. Enhance key partnerships across government, community and the private sector.

1. Background

1.1 Purpose of the Strategy

The Nature Conservation Strategy (the Strategy) is a document for all land management, planning, business and community sectors in the ACT to guide a coordinated and integrated approach to nature conservation. The Strategy will help guide future management of the Territory's open spaces, rural areas, urban areas, riverine corridors and nature reserves, and guide investment of funding and resources.

The Strategy recognises that many components of the original 1997 Nature Conservation Strategy remain relevant and contemporary, and several incomplete actions or follow on actions have been retained in the Strategy. This approach ensures continuity and commitment to long term actions such as managing the recovery of threatened species.

However, the Strategy recognises that the strategic context for managing biodiversity in the ACT has shifted. Assisting the ACT's biodiversity to adapt to a changing climate, as well as addressing gaps in management of native vegetation remnants outside of reserves, requires a number of new conservation approaches to be emphasised. A whole of landscape planning approach and a stronger focus on enhancing ecosystem resilience to better protect threatened species are two examples of these new approaches.

1.2 Context

The ACT has established a comprehensive reserve network protecting areas of high conservation value. Today, 54% of the ACT is a part of the reserve network, a much higher proportion of reserved land than in any other state or territory. All ACT ecosystems and habitats of all threatened species are represented in the reserve network.

The ACT is situated in two bioregions – the South-East Highlands bioregion and the Australian Alps bioregion. The southern half of the ACT is in the Australian Alps bioregion. The higher land, above 750 metres, retains nearly all its natural vegetation and lies almost entirely within Namadgi National Park and Tidbinbilla Nature Reserve. The sub-alpine, montane and wet forest communities that occupy this part of the ACT are part of a much greater continuous network of mountain and alpine parks that includes Kosciuszko National Park and the Victorian Alps. The scale and connectivity of this reserve network does much to protect the ecosystem function and plant and animal diversity of the ACT's higher lands.

Table 2: Outcomes and associated targets

Outcome 1: Native vegetation and biodiversity is maintained and improved.	
Targets	1. The overall extent of lowland native vegetation across the ACT will be maintained, and the condition of lowland native vegetation communities will be improved.
	2. A measurable increase in connectivity between patches of native vegetation, non-native vegetation in urban areas, and riverine systems.
Outcome 2: Landscapes are more resilient, including to climate change.	
Targets	3. A reduction in threats to biodiversity from weeds, pest animals and inappropriate fire regimes.
	4. Impacts from threatening processes, and climate change refugia in the ACT, are better understood and appropriately managed.
Outcome 3: Community health and wellbeing is increased through use and appreciation of natural areas and 'green assets' in urban areas.	
Targets	5. An increase in the area of land under volunteer effort (by ParkCare, 'Friends of ' or other volunteer groups) in management of the Canberra Nature Park.
	6. Ten areas of conservation significance (including areas outside reserves) 'adopted' by ACT schools or higher learning institutions as sites for nature-based education.
	7. Increased community understanding of, and support for, the protection of the ACT's biodiversity.

The remaining areas of the ACT are lower in altitude and form part of the South-East Highlands bioregion. Around 60% of the ACT's lowlands have been cleared. Key vegetation remnants have generally been retained as conservation reserves. However, ongoing urban expansion has fragmented these remnants and led to deterioration in their condition. Weed and exotic animal invasion, fire management and recreation pressures are significant factors. Climate change is likely to impose additional pressures.

Long-term monitoring of ACT lowland birds, reptiles and mammals has revealed a dramatic decline in both wildlife abundance and species diversity. For instance, the yellow-footed antechinus (*Antechinus flavipes*) and brown antechinus (*A. stuartii*) marsupial mice were respectively commonly and occasionally recorded on Black Mountain and Mt Ainslie in the 1970s. They have not been recorded in these areas since the early 1990s.

The 2011 ACT State of the Environment (SoE) report recognised the key threatening processes impacting upon the ACTs biodiversity as climate change impacts, changed fire regimes, pest impacts, and development impacts such as urbanisation and roads. The report noted a small increase in the numbers of threatened plant and animal species in each new reporting period.

1.3 Evidence base for the nature conservation strategy

The Strategy draws upon a wide range of policy, science and research based evidence. Some examples of the science informing the Strategy include:

- data sets for vegetation communities and threatened species collected and updated by the ACT Government for a number of decades and incorporated in action plans for threatened species and ecosystems
- the most fine-scale habitat connectivity analysis in Australia, where canopy cover and connectivity linkages are mapped at 15 square metre resolution (see ACTMAPI)
- technical reports on the state of conservation of areas or ecosystems in the ACT, such as the vegetation and habitat survey of the Murrumbidgee River (Johnson *et al*, 2009)
- investigations by the ACT Commissioner for Sustainability and the Environment (CSE), such as the investigations into Canberra Nature Park (CSE, 2011) and lowland native grasslands (CSE, 2009). The most recent State of the Environment report (2011) provided critical context about current status and threats to biodiversity in the ACT
- action plans including the Woodlands for Wildlife: ACT Lowland Woodland Conservation Strategy (Action Plan No. 27) and the ACT Lowland Native Grassland Conservation Strategy (Action Plan No. 28)
- analysis and recommendations facilitated by the CSIRO Climate Change Adaptation Flagship, outlining ACT priorities for adapting biodiversity to climate change (Doerr *et al*, 2011)
- analysis from the NSW Government identifying areas where management of native vegetation will optimise regional biodiversity benefits (Summerell *et al*, 2011)
- expert advice during formulation of the Strategy from the ACT Natural Resource Management Advisory Committee, ACT Flora and Fauna Committee, ACT Natural Resource Management Council and the ACT Climate Change Council.

1.4 The nature conservation framework in the ACT

The *Canberra Plan – Towards our Second Century*, released in 2008 (ACT Government 2008), establishes the priority of "a sustainable future which aims to ensure Canberra is a fully sustainable city in which developments are environmentally sensitive, to protect natural assets and to respond to climate change".

The ACT's legislation, policy and planning framework aims to meet this priority and consists of a range of legislation, strategies and plans which guide conservation actions and development in the ACT. The strategic framework includes the ACT Nature Conservation Strategy, action plans for threatened and endangered species, pest and weed strategies, plans of management for reserves, and the ACT Planning Strategy.

The legislative framework for conservation and environmental protection in the ACT comprises the:

- *Nature Conservation Act 1980*, the primary ACT law for the protection and management of native plants and animals; the identification and protection of threatened species and ecological communities; management of national parks and nature reserves; and the conservation of the ACT's natural resources. The Act provides for a nature conservation strategy, species and communities action plans, a Conservator of Flora and Fauna, and the Flora and Fauna Committee.
- *Environment Protection Act 1997*, which promotes the protection, restoration and enhancement of the environment as well as promotion of the principles of ecologically sustainable development.
- *Pest Plants and Animals Act 2005*, which lists pest plants and animals and provides for development of pest animal and pest plant management plans.
- *Fisheries Act 2000*, which provides for the development of fish management plans, declarations of noxious fish and provides for fishing licencing.

- *Planning and Development Act 2007*, which provides important underpinnings for environmental protection and requires plans of management for reserves, land management agreements on rural land and environmental impact assessment for development.
- *ACT Heritage Act 2004*, which establishes a system for the recognition, registration and conservation of natural and cultural heritage places and values.
- *Tree Protection Act 2005*, which identifies and protects significant trees in the ACTs urban environment, and can be applied during urban design and planning phases for new urban developments.

Existing plans of management, action plans and strategies for weeds and pest animal management provide detailed actions which underpin and implement many components of the Strategy (see Appendix 2). As such, the Strategy provides an overarching framework under which existing strategies and plans will continue to function.

1.5 Challenges and opportunities

Since self-government in 1988, the ACT Government has made significant efforts in the conservation of biodiversity in the ACT informed by the 1997 Nature Conservation Strategy and the *Nature Conservation Act 1980*. The ACT community has significantly contributed to the conservation of biodiversity.

Despite government and community efforts, and the significant level of reservation of ecosystems in protected areas, a number of challenges for the conservation of biodiversity remain.

The 2011 Australian State of the Environment Report notes that land clearing, and grazing pressures from domestic, feral and native species, are likely to increase. Pressures from urban development on biodiversity must also continue to be managed (see Box 2). More species are likely to be threatened in the future by reductions in the numbers of their populations, size of range and numbers of individuals. Pressures from landscape scale factors, particularly weeds, fire, fragmentation of habitat, diseases and hydrology, are also likely to dramatically increase in the future.

The report indicates that climate change is likely to magnify the effects of existing pressures many fold in coming decades.

While these are significant challenges, the ACT is well placed to meet these challenges:

- The level of reservation of ecosystems in protected areas provides the critical building block on which to build further conservation efforts.
- The ACT has significant scientific and research institutions located within its boundaries and makes good use of their expertise to drive innovative approaches to conservation.
- The size of the ACT and its governance structures mean coordination and integration across government and cross border is simpler than in other jurisdictions.
- The ACT has an engaged and informed citizenry who actively participate in conservation of biodiversity and citizen science.

Box 2: Nature conservation and urban development

The *Planning and Development Act 2007* is the ACT legislation that makes decisions about land use planning and the balance between nature conservation and development.

The ACT Planning Strategy provides the broader planning framework through which nature conservation and development needs can be met in a sustainable city. Ecologically sensitive planning approaches, such as urban intensification, will allow for continued urban and economic growth that does not unduly impact upon nature conservation.

The role of the Strategy is to provide for the identification of areas that are important for conservation and, in particular, to provide the landscape context in which conservation and development occurs. The *Nature Conservation Act 1980* provides for the identification and listing of threatened species and communities and for the development of action plans, which then inform the development and approval process under the *Planning and Development Act 2007*.

The Australian Government's central piece of environmental legislation, the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act), provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places — defined in the EPBC Act as matters of national environmental significance. The ACT Government has a responsibility to ensure no significant impacts on matters of national environmental significance in the ACT. Actions identified at Strategy 2 help meet this obligation.

1.6 National policies

The ACT's policies complement national strategies and plans. The conservation approaches identified in this Strategy align closely with Australia's Biodiversity Conservation Strategy 2010–30 (the National Strategy). The National Strategy sets the direction for biodiversity conservation across Australia over the next decade. The ACT Strategy reflects the intention of the National Strategy to ensure our biodiversity is healthy, resilient to climate change and valued for its essential contribution to our existence.

The Strategy links to a number of important and complementary strategies and plans at the national level. The Australian Native Vegetation Framework 2012 seeks to guide and coordinate legislation, policies, programs and activities related to native vegetation management throughout the country. The National Wildlife Corridors Plan (see Box 3) will create a national framework to allow recognition of corridors at different scales, facilitating cooperation and attracting strategic investment.

Box 3: National Wildlife Corridors Plan

In 2012, the Australian Government released the National Wildlife Corridors Plan. The intent of this plan is to restore and manage ecological connections in the Australian landscape by supporting cooperative, voluntary land management action by groups of land managers. This may include farmland, urban land, conservation reserves or Indigenous lands, and may be local, regional or continental in scale.

The Strategy includes actions to support corridors at various scales, and some of these may be nominated as 'National Wildlife Corridors' that are recognised under the plan. The National Wildlife Corridors Plan identifies the Great Eastern Ranges Initiative as an area that could be listed as a National Wildlife Corridor.

The Great Eastern Ranges Initiative runs the length of the Great Dividing Range from Victoria to Queensland. The ACT participates in the Great Eastern Ranges Initiative through the Territory and Municipal Services Directorate's participation in the Australian Alps Inter-Governmental Agreement and Kosciuszko to Coast Working Group.

A number of new and already established programs will provide significant sources of potential funding for nature conservation activities across the ACT over the course of the Strategy. These include the Biodiversity Fund, Caring for our Country and the Carbon Farming Initiative (see Box 4).

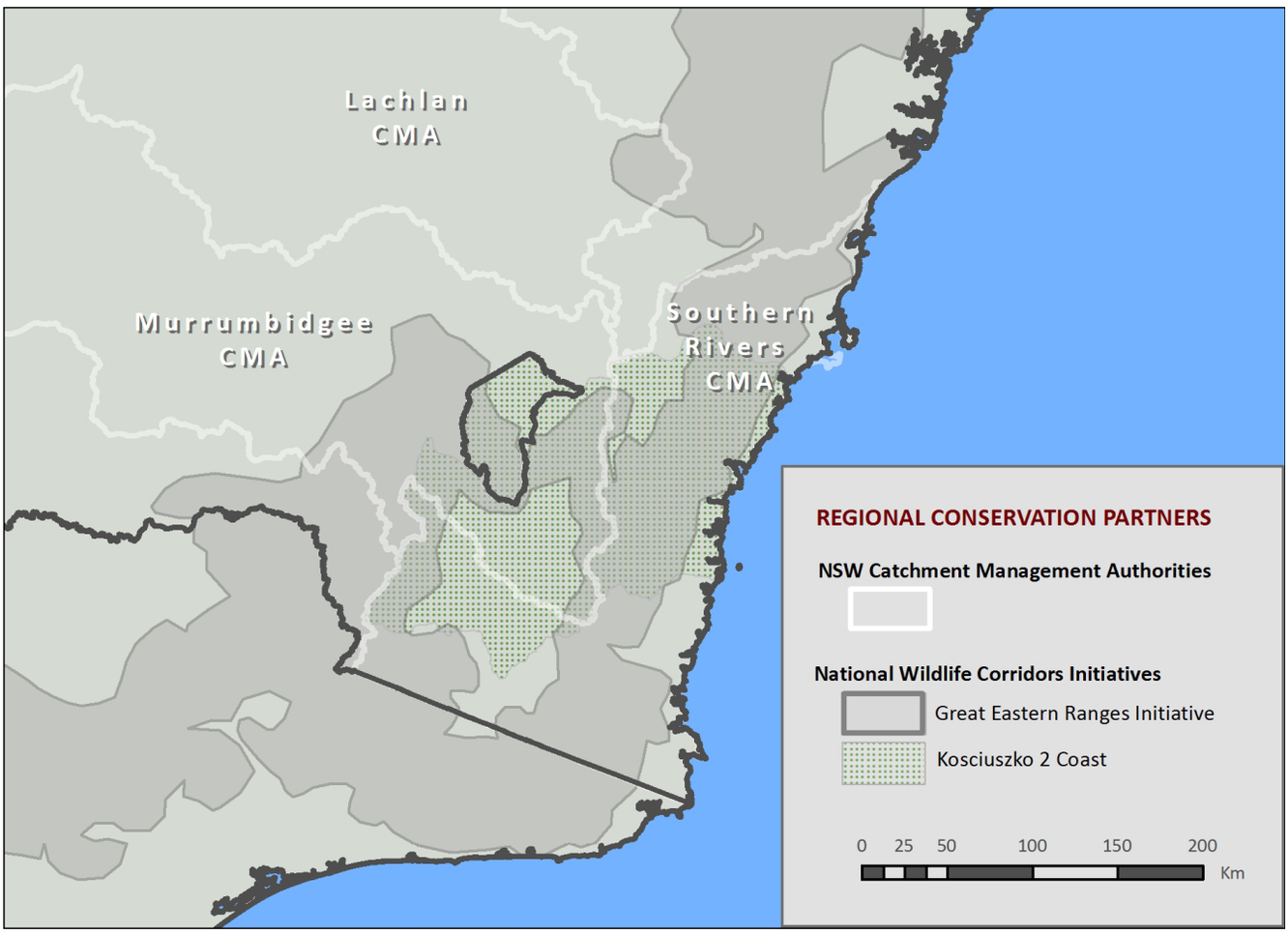
Box 4: Possible funding sources for landscape restoration

Biodiversity Fund: Providing $946 million (nationally) over its first six years, the Australian Government Biodiversity Fund aims to support land holders and land managers to undertake projects that establish, restore, protect or manage biodiverse carbon stores.

Caring for our Country: Providing $2.2 billion (nationally) from 2013–14 to 2017–18 to protect and conserve biodiversity and for the adoption of sustainable farm practices.

Carbon Farming Initiative: An Australian Government scheme to help farmers, forest growers and land managers earn income from reducing their greenhouse gas emissions through changes to agricultural and land management practices. Subject to resolution of the required contractual arrangements that would apply within leasehold systems, there are potential options for ACT land managers, including government, to participate in the Carbon Farming Initiative.

The ACT sits inside a regional landscape and is working with adjacent regions to ensure that conservation recognises local, regional and national objectives (Map 3).



Map 3: Shows some of the many partner organisations the ACT will continue to engage and coordinate with to improve cross-border management for conservation. The ACT also has strong connections with the NSW Office of Environment and Heritage (OEH) and consults regularly with the Australian Government departments of Environment, Water, Population and Communities (SEWPaC) and Agriculture, Fisheries and Forestry (DAFF). It should be noted that NSW Catchment Management Authorities will cease to exist and transition to new Local Land Service agencies with changed administrative boundaries from those above in 2014.

2. Restoring the ACT's focal landscapes

Conservation science prescribes that larger, more intact areas are generally more resilient and better able to provide conditions for species and ecosystems to adapt to climate change. The Strategy has adopted a 'landscape' approach (see Box 6 and Image 3) to prioritise conservation efforts across the ACT. Landscapes might be thought of as being similar in concept to 'planning zones'; that is, areas in which multiple land use objectives must be accommodated and multiple ecosystem services are supplied.

The four focal landscapes identified in the Strategy (see map 2) have the following management and restoration objectives:

1. Urban landscape – objective is to enhance a range of ecosystems that are compatible with urban development, which provide specific environmental services such as connectivity, habitat and amenity in parks, open space and street-scapes. This landscape encompasses suburban Canberra and the smaller settlements such as Hall and Tharwa.

2. Rural landscape – objective is to strengthen connectivity between reserves and native vegetation remnants across other tenures and restore ecosystem services such as drinking water, habitat for native species and primary production, as the basis of large, resilient lowland areas that can be agriculturally productive, retain 'lifestyle values' of rural leases and be biodiverse.

3. Water catchment landscape – objective is primarily to restore the area's ability to provide both clean water and native habitat. This landscape focuses on the lower Cotter area, which was badly damaged by the 2003 wildfires that burnt through large areas of the ACT's reserve estate. Significant revegetation efforts have begun to restore this area and should continue in parallel with the management of weeds, pest animals, fire and recreation.

4. River corridor landscape – objective is to maintain water quality and in-stream flows, and protect and restore riparian vegetation buffering rivers and streams.

Management and restoration objectives will be implemented in a way that provides sufficient flexibility to achieve a balanced set of environmental, social and economic land management outcomes. Lands in Map 2 that are categorised as 'other' will continue to be managed in line with existing management regimes, and also be the focus of a number of new initiatives over the life of the Strategy (see Box 5)

Note: the terms 'rural' and 'urban' landscapes are general descriptors of the predominant current landuse within the landscapes. The use of these terms does not imply that land is reserved for these purposes, or that other landuses are not appropriate within these areas. The areas may change over time as decisions about landuse change are made under the *Planning and Development Act 2007*.

Image 1. As the climate changes, the Murrumbidgee River Corridor will provide an important refuge for native species. Revegetating the river corridor will improve water quality, and provide habitat and resources for native species.

Box 5: Managing 'other' land in the ACT

The Strategy focuses on prioritising new investments where they are most needed within focal landscapes. Lands classified in Map 2 as 'Other' – national park, rural lands, production forests and various other tenures – will continue to be managed in line with existing management regimes.

The large upland areas of Namadgi National Park and Tidbinbilla Nature Reserve are already largely intact and well managed and will continue to be directed through their plans of management. Plantation forests are managed both for production, and to stabilise from erosion large areas of water catchment that were previously burnt in the 2003 fires. These areas are managed around harvesting schedules and receive routine land management through the Parks and Conservation Service to control weeds, pests, forestry roads and fuel loads.

Rural lands that are not in focal landscapes will be managed by landholders in line with land management agreements, which among other things, recognise and seek to protect any remnant vegetation on these properties.

In addition to ongoing management, these areas will also be the focus of new initiatives and funding over the life of the Strategy, including a number of actions in response to the Commissioner for the Environment's Investigation into Canberra Nature Park. Some currently planned initiatives include:

- developing and implementing nature reserve operational plans for priority reserves
- restoring degraded areas of native vegetation on public land including within Canberra Nature Park
- developing and implementing pest animal management plans for rabbits and wild dogs across the ACT
- monitoring endangered species and ecosystems, and the abundance and extent of selected weed infestations in reserves and
- better balancing recreation and conservation values in reserves through development of an ACT Tracks and Trails Strategy.

3. Enhancing connectivity

Maintaining and enhancing ecological connectivity is widely regarded as a critical element in assisting biodiversity to adapt to climate change. The Strategy will seek to enhance connectivity between native vegetation patches to allow the easier movement of species across the landscape, facilitating better access for them to additional habitat and resources. As indicated in Image 2, connectivity can be developed at different scales.

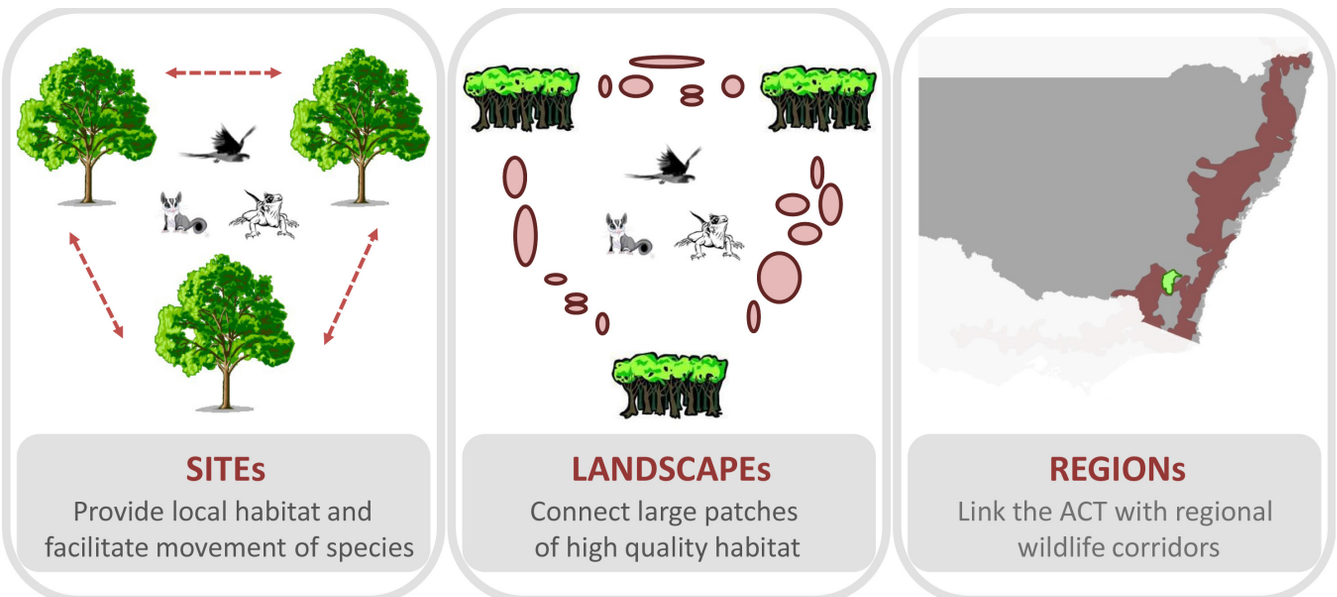


Image **2**: A simplified representation of the different scales of connectivity to be enhanced through the Strategy.

Each of these scales will have benefits for different species with different 'dispersal' (movement) patterns. Some species have small territorial ranges, so protecting and planting individual trees and patches of native vegetation at the 'site' scale will provide additional cover for these dispersal-limited species to forage and find resources. More wide-ranging species require movements between large habitat patches across a landscape to access a variety of locally rare resources. Facilitating regional connectivity will assist migratory species to move long distances between seasonal breeding grounds.

Box 6: What do we mean by 'landscape scale conservation'?

Conventional approaches to biodiversity conservation have commonly focused on protecting biodiversity through setting up and managing formal reserves such as national parks and nature reserves. Landscape scale conservation adopts a more holistic approach that integrates management across different land uses and land tenures (Image 3) to better facilitate the movement of species and ecosystem processes. Maintaining and enhancing ecological connectivity is a key approach to implementing landscape conservation. Widely regarded as a critical element in assisting biodiversity to adapt to climate change, connectivity assists the movement of species between a mosaic of reserves and other habitat features across the landscape. Landscape scale conservation also aims to enhance resilience – the ability of natural areas (ecosystems) to persevere and adjust despite changes and disturbances as a result of changing land use and climate change impacts. Resilience depends upon the continuity of ecological processes such as energy flows, nutrient cycles, hydrological cycles and food webs. Natural areas should be more resilient if they are bigger and better connected, with abatement of threats (for example, through control of weeds and pests) and maintenance of ecological processes and intact native vegetation.

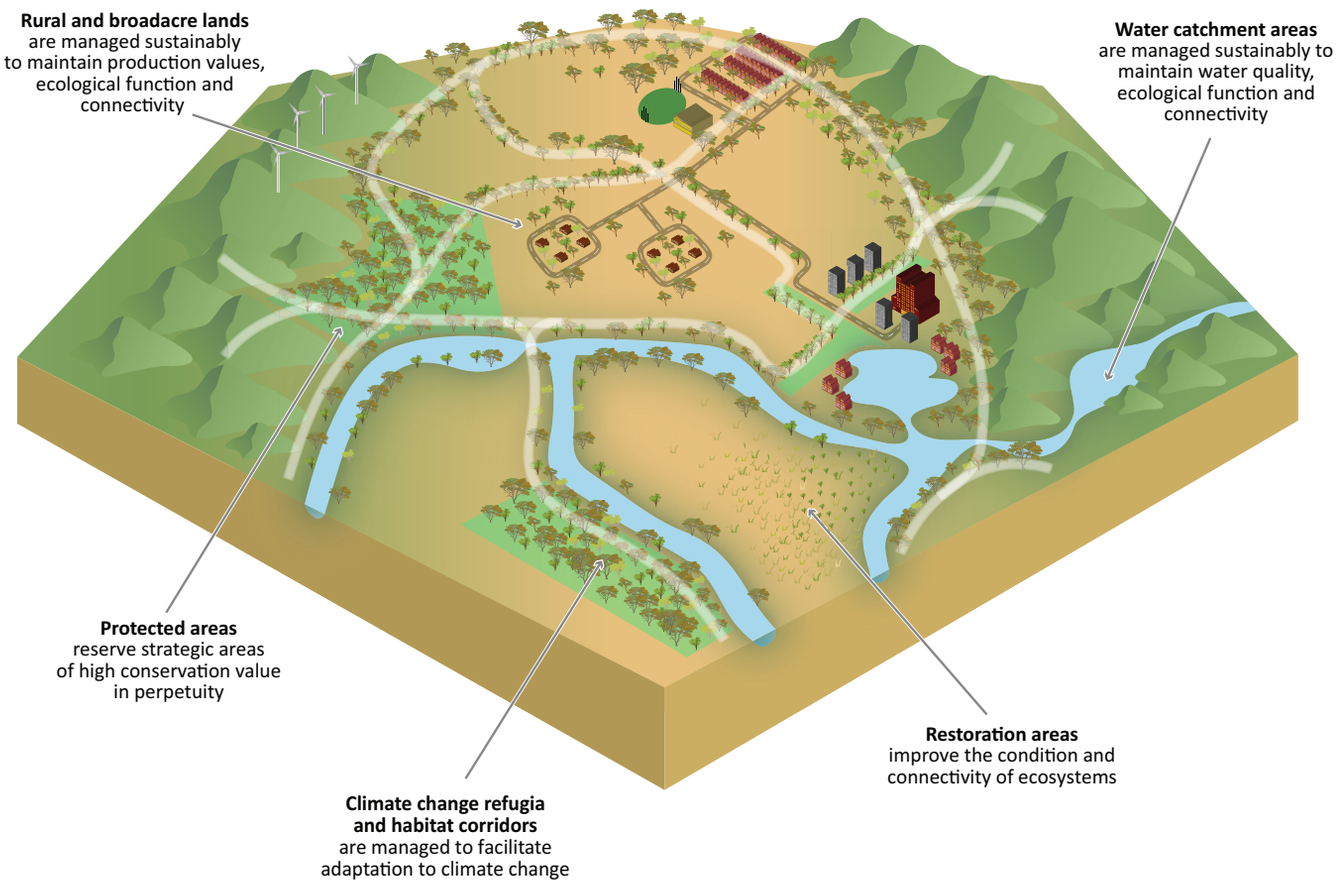


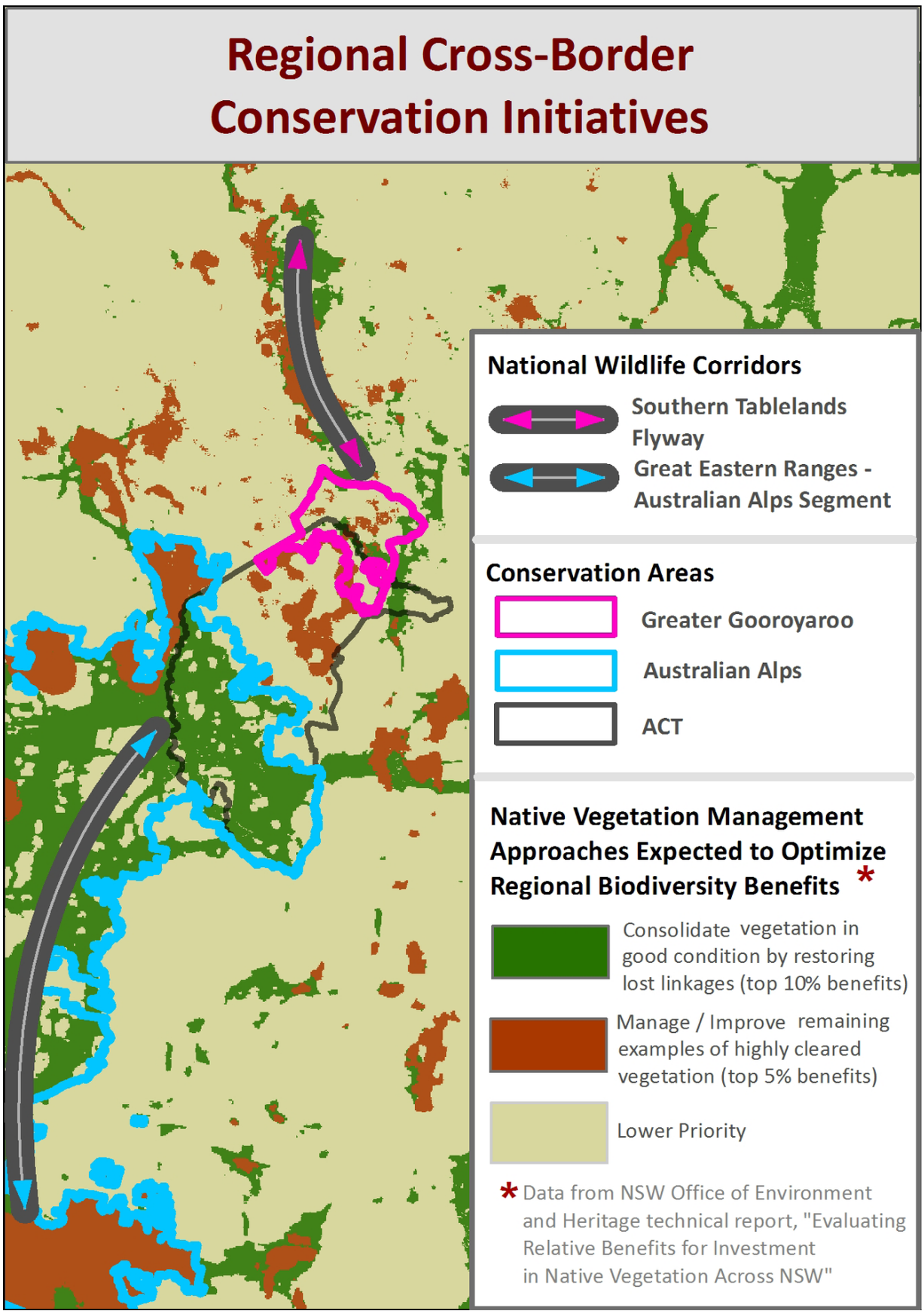
Image 3: Conceptual diagram showing some different elements of landscape scale conservation

3.1 Links with NSW

This Strategy is consistent with the draft NSW Biodiversity Strategy (2010–2015), which recognises the vital role of connectivity and bioregional planning across multiple scales. The NSW Biodiversity Strategy aims to coordinate and guide investment and effort in biodiversity conservation in NSW for the next five years.

The ACT, situated in two bioregions (the South–East Highlands and Australian Alps), is a key 'crossover' location of nationally important wildlife corridors. Upland areas in the ACT are already well-connected through the Australian Alps National Parks, a series of linked alpine and mountain reserves that stretches from the ACT into southern Victoria. The ACT has also begun working on east–west connectivity linkages from the ACT to the coast. This work is happening in collaboration with the Great Eastern Ranges Initiative (an initiative developed to strengthen the resilience of eastern Australia's mountainous ecosystems) through the Kosciuszko to Coast partnership.

The Strategy will increasingly focus on lowland connectivity linkages with NSW. Map 4 shows two major focal areas: continuing to maintain robust ecological connectivity links through the Australian Alps; and working in the northern 'Greater Goorooyarroo landscape', which includes areas of ecologically significant woodland in adjacent NSW. The ACT will work with a number of stakeholders in NSW to restore the Southern Tablelands Flyway, which is part of an important inland migratory route for birds. Map 4 (over page) also indicates a number of other potential habitat connectivity linkages with NSW, which will be pursued through the Strategy depending upon interest of partners and availability of resources.



Map 4: The ACT is a key 'crossover point' for biodiversity corridors, linking the mountainous corridors of the great divide and coastal ranges of eastern Australia (Great Eastern Ranges), with important inland migratory routes running through Central NSW and the Southern Tablelands (Western Woodlands Way and Southern Tablelands Flyway), and the Australian Alps National Parks.

4. Strategies and actions

Strategy 1: Enhance habitat connectivity and ecosystem function

Actions under this strategy form a key approach to enhancing landscape resilience. This strategy builds upon the bioregional and off-reserve conservation approaches outlined in the original Nature Conservation Strategy (1997) and uses new scientific understanding and partnerships to prioritise and implement on-ground works locally and cross border. Improving connectivity between patches of native habitat allows small populations of species to function as larger and more resilient populations. Maintaining ecosystem functions such as energy flows, nutrient cycles, hydrological cycles, and food webs will allow landscapes to better adjust to changing climatic conditions. Actions under this strategy will link together native vegetation at various scales, buffer existing habitat patches, link terrestrial and riverine systems, and conserve altitudinal gradients to allow species to shift their ranges in response to a changing climate.

1. Develop baseline information on landscape function

Knowledge about ecosystem function needs baseline information on key aspects of the ecosystem. Over the life of the Strategy, the ACT Government will develop these key understandings and provide baseline information on:

- a map of the ACT's vegetation communities at 1:25,000 scale
- vegetation connectivity mapping (spatial links analysis – see Map 5)
- habitat connectivity mapping for wildlife
- mapping native vegetation condition
- complete soil mapping for the ACT
- a hydro-geological profile
- a map of the most serious and widespread environmental weeds
- pathways and incidence of key migratory species (developed through a migratory species action plan)
- resilience analysis for key ACT ecosystems, such as box–gum woodlands, natural temperate grasslands and alpine bogs
- participation in cross border planning and sharing of relevant data.

2. Undertake fine scale planning for habitat connectivity

Fine-scale assessments within ACT landscapes will identify local priority areas and strategic investment opportunities to enhance habitat connectivity and ecosystem function across both public and privately managed lands.

3. Enhance regional connectivity

Habitat connectivity is vital for ensuring ecosystem function throughout a regional conservation network. The Strategy will increasingly focus on lowland connectivity linkages with NSW (Map 4).

Continental scale connectivity projects with NSW will focus on linking woodland habitat in the northern ACT with the Southern Tablelands Flyway. Priorities will focus on the Greater Goorooyarroo section of the Flyway and continue to manage intact linkages through the Australian Alps. The ACT will continue working with NSW on regional connectivity initiatives to align conservation and climate change adaptation investments.

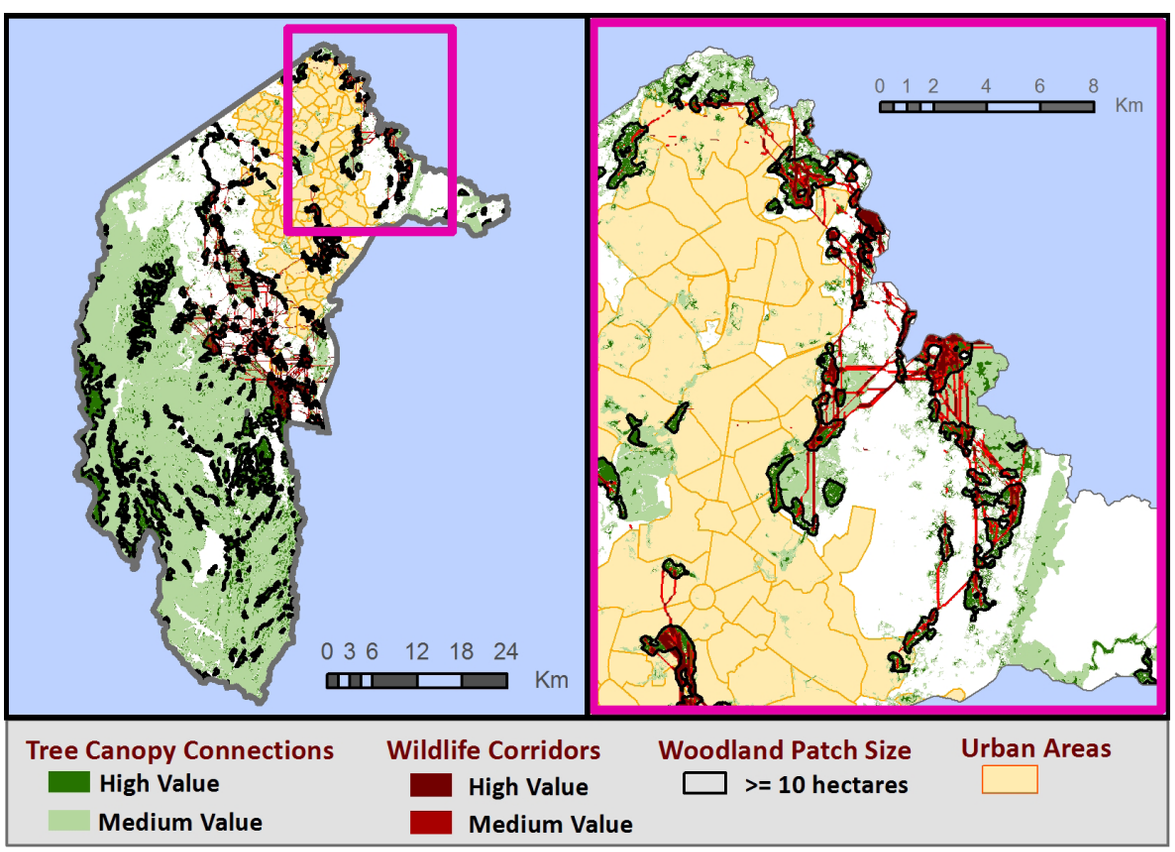
Some guidance already exists through planning documents such as: the Murrumbidgee Catchment Action Plan; the Planning Framework for Natural Ecosystems of the ACT and NSW Southern Tablelands (NSW NPWS, 2002); and the forthcoming ACT–NSW Strategic Plan for Land Use and Infrastructure. The ACT has also entered into agreements for regional collaboration with the NSW Government and the South East Region of Councils (SEROC).

4. Assess conservation investment opportunities across public and privately managed lands in the ACT

A dynamic natural resource management (NRM) planning framework will be developed to adaptively manage conservation investments across public and privately managed land. Inherent in this approach will be a shift away from reliance upon static planning documents towards more flexible tools designed for adaptive management and feedback into implementation cycles. The ACT will make available online a comprehensive set of high quality, high resolution NRM planning layers (including those listed under 1 above) on ACTMAPi, and manage data through the Spatial Data Management System. New spatial products will be synthesised and provided to government, the community and landholders, and will include priorities for management and protection such as:

- mapping of future climate refugia
- possible locations for carbon sequestration projects that maximise biodiversity co-benefits
- gaps in wildlife corridors that are critical to landscape connectivity
- wildlife corridors
- priority areas for restoration of habitat for threatened ecological communities
- potential species reintroductions or translocations.

Ongoing engagement with rural landholders will be important in identifying opportunities on leasehold land, and understanding how to better manage threats between private and publicly managed lands.



Map 5: **'Spatial links analysis'** is one of the tools the ACT will use to plan potential corridors for a wide range of wildlife. Red pathways indicate where better management of native vegetation (including planting trees and shrubs) could improve connectivity for wildlife between habitat patches

5. Fund priority landscape actions

Investment will be sought through a variety of mechanisms, including government, private enterprise and in-kind contributions. Funding will be used to support restoration and enhancement of specific environmental services in each landscape. For example, investments in the ACT Woodland Restoration Program and the 'Restore ACT Goorooyarroo' project (see Map 7 and Box 9) will enhance carbon capture, native habitat and water quality, with possible production benefits for landholders. Further funding will be sought through sources such as the Australian Government Biodiversity Fund, Caring for our Country Initiative, Carbon Farming Initiative and other opportunities as they arise.

Strategy 2: Manage threats to biodiversity

There is a range of factors and processes that threaten biodiversity in the ACT. Invasive species (weeds and pests); overgrazing by pests, domestic stock and native animals; drought; inappropriate fire regimes; and land clearing remain the most critical issues to be addressed.

The Strategy will continue a number of actions initiated under the original 1997 strategy, particularly implementation of the weed and vertebrate pest strategies (now replaced by the Pest Animal Management Strategy), continuing to integrate ecological considerations into fire management, and a range of enhanced catchment management actions such as those detailed in the Lake Burley Griffin Action Plan (2012). Climate change is likely to make many of the current biophysical threats to biodiversity significantly worse. By managing current threats better, the ACT's biodiversity will be more resilient to climate change.

The actions against this strategy help improve landscape function and align with connectivity conservation and landscape priorities (Strategy 1).

1. Implement ACT Weed Strategy (2009–19)

Key priority actions:

- The schedules to the *Pest Plants and Animals Act 2005* will be updated to reflect the new Weeds of National Significance and other emerging weeds of concern in the ACT.
- The ACT Government will develop pest plant management plans under the *Pest Plants and Animals Act 2005* for critical weed species.
- The Environmental Weed Operational Plan will continue to be implemented, with a key focus on protecting environmental assets.
- Serious weed infestations across (and adjacent to) the ACT will be mapped to help prioritise action on weeds.
- A new weed monitoring system will be developed for the ACT.
- Programs that prevent new weed problems occurring will be developed.
- Innovative approaches will be trialled with landholders, such as increasing soil organic content and changing pasture management practices to combat invasive weed species such as African Lovegrass.

2. Implement Pest Animal Management Strategy (2012–22)

Key priority actions:

- Pest animal management plans under the *Pest Plants and Animals Act 2005* will be produced for species that pose a critical threat to ACT biodiversity. A plan for rabbits is under development. The management of pigs, foxes and wild dogs will also be considered as priorities for the development of pest animal management plans.
- The schedules to the *Pest Plants and Animals Act 2005* will be updated to reflect the new Environmental Pest Animals of National Significance (EPANS) and other emerging pests of concern in the ACT, in particular aquatic and invertebrate pests.
- The government will improve management of the impacts of cats on wildlife and consider expansion of the ACT cat containment policy.

3. Manage total grazing pressure on ecosystem function in reserves

Overgrazing by both native and pest species can harm sensitive ecological communities such as grasslands and grassy box–gum woodlands.

As a priority, the ACT Government will monitor the impacts of grazing on vegetation condition so it can respond to overgrazing impacts on natural ecosystems to maintain or improve ecological function, species diversity and vegetation condition. The government will continue to draw upon research related to grazing pressure that is underway in the Mulligans Flat woodland experiment.

The development and implementation of the Pest Animal Management Plan for Rabbits and the Kangaroo Management Plan are the key actions to manage total grazing pressure in reserves. Actions to manage the impacts of kangaroos and rabbits will be based on the best available science and understanding of impacts.

Ecological modelling of the link between kangaroo population densities and the conservation impacts of kangaroo grazing will inform future kangaroo management.

The use of strategic stock grazing in reserves to manage fuel loads will be informed by best available knowledge of the ecological impacts.

2.4 Establish and implement ecologically appropriate fire regimes

While appropriate fire regimes have been established for native vegetation communities in the ACT, a gap in knowledge remains around what constitutes appropriate fire regimes for fauna (vertebrate and invertebrate). Current and future research will identify appropriate ecological thresholds for controlled burns for fauna; combined with vegetation information, and these will be used to inform the Strategic Bushfire Management Plan.

Monitoring of post-fire recovery, from both the 2003 bushfires and routine controlled burns, will continue.

The Strategy recognises the role of the ACT Strategic Bushfire Management Plan Version 2 (SBMPv2) in guiding management decisions about fire regimes in different areas across the ACT. Where possible, the ACT Government manages planned fire regimes to ensure that they are as similar to natural ecologically based fire regimes as possible, resulting in significant ecological benefits.

The SBMPv2 also includes principles about the need to balance social and environmental benefits, particularly in areas such as the urban interface, where public safety requirements will take precedence. These principles also recognise the dynamic nature of natural ecosystems, and the need for fire managers to be able to identify and implement appropriate fire management practices on an ongoing basis. This adaptive management approach will be particularly important in response to climate change, under which it is anticipated that fires may become more frequent and severe.

2.5 Implement improved catchment management to support aquatic ecosystems

The ACT will continue to manage catchments, with the aim of maintaining or improving the condition of aquatic ecosystems under a changing climate.

The ACT will develop a catchment management plan for the ACT and region to manage land for all its values in a more integrated way. Maintaining environmental flows, managing sources of pollution, protecting and enhancing riparian vegetation, and keeping aquatic pest species out of pristine catchments such as the Upper Cotter will be key approaches. Further research will be required to understand the impacts of climate change on these systems and the adaptive management approaches that may be required.

Projects that increase habitat for in-stream biodiversity, such as fish ladders and artificial habitat, will be developed and pursued wherever possible. Implementing key actions in the Upper Murrumbidgee Demonstration Reach Implementation Plan (ACT Government, 2010) will be a high priority activity for which funding will be sought.

2.6 Develop a migratory species action plan

Current provisions under the Nature Conservation Act provide for recognition of Commonwealth listed migratory species through special protection status. It is proposed that a migratory species action plan be developed for the ACT. The plan will map critical habitat for migratory species that are known to regularly occur in the ACT, map potential habitat, identify strategies for management of migratory species, and identify any requirements for monitoring migratory species or their habitat.

2.7 Develop an ACT soils strategy

Soils are a major resource that underpins the health of natural, urban and rural ecosystems. ACT State of the Environment reports have recognised the limited availability of baseline soil data in the ACT, and the inability to report on changes in soil condition in relation to factors such as carbon storage, erosion, dryland salinity and acidification. An ACT soils strategy will be developed to provide a strategic approach to complete soil mapping for the ACT in accordance with national soil data collection and storage standards, and to guide the development of an ongoing program for monitoring soil condition and advising on best practice management for different soil types and land uses.

Strategy 3: Protect species and ecological communities

This strategy will institute actions that are designed to protect species and ecosystems by increasing landscape resilience. Many of the approaches under this strategy are carried over from the original 1997 Nature Conservation Strategy, but with an enhanced focus on understanding and assisting biodiversity adjust to the longer term impacts of climate change.

Currently, vulnerable and threatened species and ecological communities are the focus of action plans, which are a statutory requirement under the ACT *Nature Conservation Act 1980*. While the development of action plans will remain a priority for threatened species and ecosystems, management approaches will also enhance efforts to better manage species at risk by implementing actions that maintain and improve habitat conditions and reduce threats in key restoration landscapes (see Strategy 1).

1. Manage the protected area estate

The ACT's conservation estate is significant; it is the primary focus for the conservation of threatened species and ecosystems. Managing large intact and connected ecosystems within reserves is critical to the survival of many species and ecological communities. Plans of management are reviewed and updated to take account of new and emerging management issues. The government has agreed to a number of recommendations (see ACT Government, 2012) from the Commissioner for Sustainability and the Environment's Investigation into the Canberra Nature Park (ACT Commissioner, 2011), such as development of reserve operation plans for high priority areas, and monitoring of threatened ecosystems, species and abundance and extent of weeds in priority reserves. The agreed recommendations will be implemented over the next 10 years. Many are already included as explicit actions elsewhere in this Strategy.

2. Develop, implement and review action plans for threatened species and communities

Currently, vulnerable and threatened species and ecological communities are the focus of action plans. Action plans will remain the key approach to identify and manage threats to threatened species and communities.

There is currently no statutory requirement to review action plans. The ACT Government will ensure each action plan developed in the ACT is reviewed to ensure it remains current. Plans will also be updated as necessary if the outcomes from monitoring programs indicate actions need to be updated.

3. Restore and manage priority landscapes

Management approaches will also increase efforts to better manage species at risk by implementing management actions that maintain and improve habitat condition and reduce threats in key areas. Key actions will be delivered through Strategy 1 (priority landscape actions) and Strategy 2 (managing threats to biodiversity). Management actions will also focus on enhancing ecosystem resilience, to ensure that all species – including those not normally the focus of management (such as invertebrates – See Box 7) are provided with the best conditions to persist and thrive.

4. Identify biodiversity refugia under drought and climate change

Some areas in the landscape are likely to be important refugia from drought and climate change for a range of species. These areas may not have significant conservation value in their own right, but are important areas at certain times. The ACT Government will undertake work to identify and manage these potential areas. This work will be informed by Strategy 1 (Action 4) of this Strategy.

5. Monitor five priority ecosystems most vulnerable to threats

A great deal of uncertainty exists around what changes may occur to sensitive ecosystems (such as changes in structure, species assemblages, and persistence of these ecosystems) in response to climate change, land use change, fire, and new weed and pest animal incursion. In the ACT, the five most sensitive ecosystems are considered to be native temperate grasslands, grassy box-gum woodlands, alpine bogs, montane forests, and the Murrumbidgee-Cotter River system.

Some changes in these ecosystems may be beyond our ability to respond to, particularly some of the changes associated with long term climate changes. However, some changes can be managed. For example, if key weed and pest animal species are observed to be highly threatening to a particular ecosystem, early identification and response will reduce the likelihood of a transition to an undesirable ecosystem state (e.g. woodlands becoming dominated by woody weeds). The aim of any management intervention is to improve the resilience of that system to current and future threats.

In order to ensure that appropriate and timely management responses are developed and implemented, the ACT will continue to monitor the five priority ecosystems based on a common set of indicators. In terms of the Upper Cotter/Murrumbidgee, monitoring will focus on fish species only (water quality monitoring is already routinely undertaken in the ACT). Where unexpected negative changes are observed, appropriate management responses will be implemented.

6. Implement captive animal breeding and translocation programs

Captive breeding and translocation programs are a measure of last resort for management of animal species because they are expensive and high risk. Nevertheless, they can be critical to the survival of species that are facing an extreme risk of extinction in the wild and are used to provide a safeguard when species in the wild are threatened. Key actions include:

- The ACT will work with the NSW Office of Environment and Heritage to develop a common framework that can be used to guide translocation and captive breeding programs for animals.
- The captive breeding and reintroduction program for the corroboree frog will be maintained.
- Captive breeding and translocation programs for the brush-tailed rock wallaby and the reintroduction program for the eastern bettong will be maintained and expanded based on recommendations from the research community and availability of funding.
- Captive breeding and translocation programs for the grassland earless dragon and striped legless lizard are under development and will be implemented where feasible.

7. Propagate and translocate threatened plants

Propagation and translocation programs are a measure of last resort for management of plant species because they are expensive and high risk. Nevertheless, they can be critical to the survival of species that are facing an extreme risk of extinction in the wild and are used to provide a safeguard for species where threats to the species in the wild are being addressed. Key actions include propagation and translocation of:

- Tuggeranong lignum
- Murrumbidgee bossiaea
- small purple pea
- button wrinklewort
- threatened orchids
- Ginninderra peppercress.

Subject to community interest, a community plant rescue program will be developed and implemented for areas where development is proposed and plant rescue techniques such as translocation or seed harvesting are feasible.

8. Establish seed banks and seed orchards

The ACT will continue to work with the Australian National Botanic Gardens and Greening Australia on the development, management and use of seed banks and seed orchards for use in landscape restoration programs and threatened species management.

Consideration should be given to establishing and managing seed orchards ‘in-situ’ in natural ecological remnants on public and leasehold land. The ACT Government has already begun collecting seed for sensitive alpine bogs, and gaining a better understanding of propagation schedules in case future restoration is deemed necessary. The ACT will update the seed collection policy.

Box 7: Invertebrate diversity in grassy woodlands

The vast majority of global biodiversity consists of invertebrates – creatures without back bones. In the ACT, there has been some research on this large group of living organisms, primarily centered around two threatened species, the Perunga grasshopper, and the golden sun moth, found in the region’s dwindling natural temperate grasslands.

Research in the woodlands of Mulligans Flat Sanctuary has focused on the role of woody debris (piles of timber that provide microhabitat structure) in increasing beetle diversity. This research (Barton *et al*, 2011) found that timber piles increased the abundance and species richness of beetles beneath log piles when compared to surrounding areas that are subject to grazing by herbivores (kangaroos and stock).

Important findings such as these provide impetus to replicate these kinds of approaches across other areas, particularly where grazing pressures are high. These findings will be incorporated into planning grassy woodland restoration works across the ACT’s lowland areas (see also Map 7 and Box 9).

Strategy 4: Enhance biodiversity value of urban areas

Although not as significant as conservation reserves, the management of biodiversity assets within and close to urban areas can make a significant contribution to the conservation of biodiversity within the ACT.

The importance of Canberra's natural setting has been recognised through the formal adoption of the National Capital Open Space System – an interlinked set of spaces that comprise the inner hills and ridges around urban areas, lakes and river corridors, as well as mountains and bushland west of the Murrumbidgee.

The Strategy will enhance ecological connectivity at local and regional scales by connecting urban green assets with nature parks, reserves and river corridors to encourage local wildlife movements, and by facilitating migration patterns of species for foraging and breeding (e.g. superb parrot). The Strategy approach will draw strongly upon the community (both residents and 'community scientists') to lead many of the monitoring and restoration initiatives around Canberra.

1. Manage impacts of urbanisation on biodiversity

The *Planning and Development Act 2007* is the ACT's approach to avoid and mitigate the impacts of urban and other development on the ACT's biodiversity. This act allows for environmental impact statements and strategic assessment processes and makes provisions for the reservation and management of land for nature conservation purposes. This has led to some 54% of the ACT being set aside in formal conservation reserves, protecting significant areas of conservation value.

The *Nature Conservation Act 1980* includes a range of provisions for protecting biodiversity, including through listing of threatened species and ecosystems and providing for action plans for threatened species. Provisions require wildlife management and use of biodiversity to be licensed. Much lowland vegetation, and several species for which it provides habitat, are listed by the Australian Government as matters of national environmental significance. This means that most major activities to clear native vegetation need both approval under the Planning and Development Act and the Commonwealth's *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act).

Environmental offsets are often used to address the residual impacts of development where threatened species and ecosystems are impacted. The approach to offsets in the ACT, and nationally, is to avoid impacts wherever possible; for example, by setting aside lands for conservation, mitigating impacts such as avoiding construction within breeding seasons, and providing offsets for any significant residual impacts.

The ACT will finalise its approach to environmental offsets. Where development impacts upon biodiversity values, the *Tree Protection Act 2005* provides for the retention of old and large trees (subject to safety considerations) that form irreplaceable keystone structures within the landscape.

2. Manage urban open space

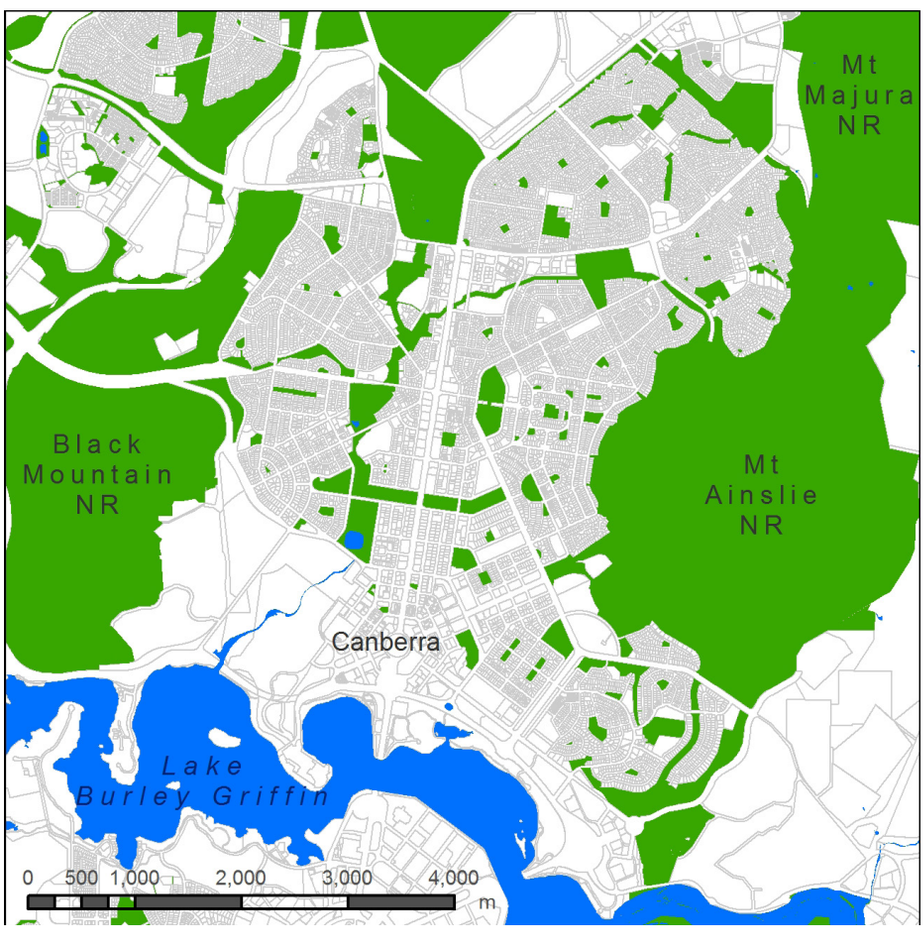
The ACT Government will develop policies to improve biodiversity outcomes from landscaping; such as policies for use of trees of local provenance, use of vegetation structure to provide additional habitat, and strategies to reduce wildlife and vehicle interactions.

The ACT has recently revised guidelines for the appropriate use of species in the urban parks and other open space (the 'Tree Selector' database), which will be used to take into account climate change impacts and habitat values of the existing urban forest. This will include consideration of the provenance of native species, which may provide additional habitat, and reduce leaf litter and pollution of waterways. The retention of mature trees throughout the urban landscape will remain an important priority. Consideration will be given to increasing the degree of native plantings and complexity of green assets and new plantings in urban open space in key areas and selection of evergreen plant species along river corridors to manage nutrient loads in waterways. This will enhance connectivity, subject to meeting fire risk and other concerns. Care will be taken to ensure new plantings do not create new weed problems or foster unstable populations of native or exotic animal species.

3. Enhance connectivity through urban areas

Connectivity of native habitat can be improved by enhancing street plantings and increasing 'nativeness' and heterogeneity. This can be achieved by enhancing understorey complexity, creating linkages to wetlands and other 'engineered' habitat features (e.g. wetland ponds) in parks and urban open space, and increasing the nativeness

of people's backyards (see Map 6 and Box 8). The Government will develop and implement education programs and investigate incentive programs to encourage more native plantings in backyards near reserves. Strong partnerships between government, developers and community groups will be important to ensure the negative impacts of urbanisation are minimised. It is recognised that exotic trees can also provide shelter and food to native animals and that a mixture of evergreen and deciduous species can provide heating and cooling benefits in urban areas through different seasons. These considerations will be incorporated into connectivity planning.



Map 6: Green infrastructure in the Inner North

Box 8: The Inner North: An outdoor laboratory to enhance amenity, natural space and biodiversity

The older suburbs of northern Canberra, the 'Inner North', (Map 6) consist of a mosaic of larger well-established urban blocks, with mature street trees and park land trees, open space, parks and engineered wetlands. Numerous reserves are situated in the surrounding hills and ridges. This abundant green infrastructure provides shade, amenity, and niches for a variety of fauna.

The degree to which this mosaic facilitates diversity and connectivity is unclear. The Inner North represents a valuable opportunity for government, researchers and the community to collaborate and trial approaches to increasing biodiversity, habitat and connectivity in ways that enhance the amenity values and resilience of urban areas to climate change. Enhancing green infrastructure in parks and along water courses between Black Mountain and Mount Ainslie/Majura will enhance connectivity. Additional work would need to be undertaken on how lessons and design principles can be applied to more compact areas such as in Gungahlin and Molonglo.

4. Manage the urban edge

Activity along the urban/bush interface is critical for managing the impacts on natural areas from domestic animals, invasive plants, waste dumping, recreational use and fire management. Managing this interface appropriately will also provide increased opportunity for native animals to move in response to environmental stress (e.g. droughts, fires); backyards, parks and urban open space can provide temporary refuge. Bush on the Boundary (BoB) – an existing program coordinated by the ACT Conservation Council in collaboration with the ACT Government, the community and developers, provides a useful framework to better manage urban impacts an native vegetation and biodiversity, both on and off reserves.

The government will continue to support Programs in new residential development areas, to minimise impact of urbanisation on species.

To support community groups and the community more generally to manage the urban edge, the ACT Government will better manage the impacts of cats in and around new suburbs, work with the community on managing fire hazards and reducing fire risk, prosecute illegal dumpers, and work with advocacy groups and others to ensure recreational uses such as mountain biking do not unduly impact upon biodiversity values.

5. Support urban landcare and ParkCare activities

The ACT Government already provides support to land and park care groups across the ACT. Some of these groups focus on reserves adjoining or within urban areas. There is scope for other groups to engage in landcare and ParkCare activities in other areas, such as urban open space, roadsides and other green spaces. Consideration must be given to the feasibility of adequately resourcing any new groups over the long term.

6. Manage and enhance 'green' assets and infrastructure

The Strategy recognises the importance of natural features (green assets, such as parks, gardens, trees, vegetated open space etc) in urban areas for biodiversity, community health and wellbeing, and helping the city adjust to a changing climate (e.g. reducing the 'urban heat island effect').

The ACT Government will develop new principles for the maintenance and management of the ACT's green assets and infrastructure based on regionally relevant climate information.

The ACT Government will review the standards for street tree planting in new areas and urban open space to ensure they are climate ready and provide adequate shade to mitigate the impacts of the heat island effect.

Strategy 5: Strengthen community engagement

The ACT has a proud and very active history of community engagement in nature conservation through the involvement of community organisations, and dedicated individuals who volunteer their time and expertise. The success of the Strategy will continue to rely on these groups. The greater involvement of ACT residents will continue to be promoted and supported. This Strategy continues to support a number of key actions from the previous 1997 Nature Conservation Strategy, with a strong focus on engaging youth and indigenous people in natural resource management, and harnessing community capacities through a citizen science program.

1. Support greater community involvement through volunteering

Continued support to increase the involvement and effectiveness of volunteers in conservation in the ACT will be provided though coordinators and facilitators and community partnerships. The aim is to increase the number of groups and areas actively managed by volunteers by introducing innovative engagement strategies and targeting new interest groups. ParkCare groups will continue to be supported with training, protective clothing and access to equipment. The provision of Parks and Conservation Service resources will be important to ensure ParkCare groups receive the staff support and coordination required for their land management activities.

2. Enhance and promote use of citizen science

The ACT has a wealth of community science to draw upon through established groups and individuals willing to volunteer skills and experience. Community groups such as Waterwatch, Frogwatch and the Canberra Ornithologist Group provide critical monitoring of the ACT's biodiversity.

The ACT Government will work on processes and systems to ensure community-based information can be used effectively to contribute to environmental reporting processes to inform decision making.

Community groups will be supported through grants and the provision of equipment and training to assist in the ACT's efforts to monitor weeds in reserves, waterways and privately managed land.

If needed, the ACT Government will help facilitate community involvement in providing data to the Atlas of Living Australia to ensure this valuable information is captured and available to the public.

3. Deliver targeted community education campaigns on priority issues

Targeted education campaigns are seen as priorities to support the landscape approach of the Strategy. These will be implemented in partnership with community groups and the education sector. Priority campaigns include:

- greater awareness about managing the urban / bushland edge
- managing backyards for biodiversity
- understanding the importance of box–gum woodlands and native grasslands
- managing the impacts of pets roaming from the suburbs and
- understanding the implications of climate change on biodiversity in the ACT and region.

4. Build Indigenous engagement in the management of natural resources

The ACT has been working with Indigenous communities in natural resource management in partnership with the Australian Government. Subject to resources, key actions will continue, including:

- employment of Indigenous rangers
- programs to promote traditional ecological knowledge and
- employment of an Indigenous Natural Resource Management Facilitator.

5. Encourage the involvement of youth in nature conservation

Maintaining the ranks of conservation volunteers and natural resource management professionals requires engaging the interest of the next generation of young people in issues related to nature conservation. A program will be implemented to encourage and support primary and secondary schools, colleges and universities to 'adopt' an area of conservation significance (including areas outside of reserves) as places for nature-based education. This program would also involve cooperation with local community groups (e.g. ParkCare) and government staff to provide technical expertise, information and access to sites if necessary.

6. Support appropriate recreational and tourism use of natural areas

Natural areas in the ACT provide a wide range of outdoor recreation and tourism opportunities. Recreation and tourism are an important mechanism for broadening community support for natural areas, in particular, through engaging a wider cross section of interest groups in their management and use. Existing Plans of Management already define appropriate use for reserves in the ACT; however additional strategic guidance will ensure that appropriate recreation and tourism is encouraged that will support conservation management across multiple tenures. Key actions include:

- finalising and implementing the ACT Tracks and Trails Strategy
- developing an ACT Recreation Strategy and
- finalising the draft ACT Mountain Bike Strategy.

7. Enhancing key partnerships across government, community and the private sector

Implementation of the Strategy will benefit from a wide range of partnerships with the community and research networks. In particular, the government will:

- work across all government agencies and with independent bodies such as the Heritage Council and Flora and Fauna Committee to align effort in implementing the Strategy
- work closely with rural landholders and their representative body, the Rural Landholders Association (RLA) to identify interest, and the best mechanisms for better protecting and enhancing native vegetation, and managing threats to biodiversity on privately managed land
- work with and share knowledge with large institutional landholders, such as the Australian Government, ACTEW and Canberra Airport, to ensure conservation values are managed across tenure boundaries
- continue to support the Mulligans Flat experiment as a key research and learning site for woodland restoration and management throughout the ACT
- continue engagement with ACT based research organisations on climate change adaptation, spatial planning for

conservation, weeds, pests, fire, and restoration science

- promote knowledge transfer from this research and other sources into management and government and community planning processes
- formalise engagement with national networks focused on biodiversity and climate change
- work closely with the community at the urban bushland interface to minimise impacts on the natural environment
- link researchers and the community to encourage the latest natural resource management science to be incorporated into community activities such as environmental plantings, weed identification and management of riparian areas
- continue work with regional / cross-border partners such as Murrumbidgee Catchment Management Authority, Yass and Palerang Councils, NSW Office of Environment and Heritage, and the Kosciuszko to Coast (K2C) partnership
- encourage appropriate recreational use of natural areas through development of a recreation strategy.

5. Monitoring and review

5.1 How will the strategy be monitored?

The effectiveness of the Strategy will be measured through targets identified under each of the Strategy's three outcomes. In some cases, a number of strategies and component actions will be cross-cutting, contributing to a number of targets. Progress against targets will be monitored and, where possible, quantitatively assessed. For example; increase / decrease in area of native vegetation in hectares; or number of people volunteering for conservation activities in the ACT.

Reporting against targets will occur through the Commissioner for Sustainability and the Environment's State of the Environment Report, which occurs every four years. Data for each indicator will be collected by responsible agencies (primarily the Environment and Sustainable Development Directorate and the Territory and Municipal Services Directorate) and provided to the Commissioner for Sustainability and the Environment. Additional reporting on progress on implementing the Strategy will occur through the Environment and Sustainable Development Directorate Annual Report.

5.2 Targets and indicators

Targets under Outcome 1 (native vegetation and biodiversity is maintained and improved) aim to maintain the area of land under native vegetation in the ACT while improving the condition and connectedness of native vegetation for associated wildlife. Active restoration and improved management of threats (see outcome 2 below) are expected to lead to better outcomes for the ACT's biodiversity, including threatened species.

Targets under Outcome 2 (landscapes are more resilient, including to climate change) aim to increase landscape resilience through better management of existing native vegetation, identification and appropriate management of climate change refugia, and better management of threatening processes. Targets focus on measuring progress in reducing the key threats identified in the Strategy including invasive weeds, pest animals and inappropriate fire regimes.

Targets under Outcome 3 (Community health and well-being is increased through use and appreciation of natural areas and 'green assets' in urban areas) aim to increase the overall levels of community engagement in the active management and appropriate use of natural areas.

Table 3 Targets and associated indicators

Targets related to Outcome 1 - maintaining and improving effective habitat and biodiversity
1. The overall extent of lowland native vegetation across the ACT will be maintained, and the condition of lowland native vegetation communities will be improved *Indicators:* • Extent of lowland native vegetation (broad measure in overall hectares, to be monitored by vegetation community from 2013 when the revised ACT vegetation communities map is complete) • Condition (standard indicators to be developed nationally under the Australian Native Vegetation Framework by 2015)
2. A measurable increase in connectivity between patches of native vegetation, non-native vegetation in urban areas, and riparian areas *Indicators:* • Spatial links habitat connectivity score (see Image 3) • Riverine connectivity measure (number of in-stream barriers)
Targets related to Outcome 2 - landscapes that are more resilient, including to climate change
3. A reduction in threats to biodiversity from weeds, pest animals and inappropriate fire regimes *Indicators:* • Abundance and distribution of priority ACT environmental weeds ('high', 'very high' and 'extreme' danger ratings) in reserves • Abundance and distribution of significant pest animals; significance and levels of damage from pest animals • Prescribed burning in high conservation areas to be informed by ecological guidelines and ecological fire thresholds, and monitoring undertaken to ensure consistency
4. Impacts from threatening processes, and climate change refugia in the ACT are better understood and appropriately managed *Indicators:* • Monitoring programs established in five ACT priority ecosystems considered to be most sensitive to threats including: native grasslands, woodlands, alpine bogs maintain forests, and the Murrumbidgee-Cotter River system. • Number of refugia identified and appropriately managed (maintained or enhanced)
Targets related to Outcome 3 - increased community health and wellbeing, including from engagement with and appreciation of natural areas
5. An increase in the area of land under volunteer effort (ParkCare, 'Friends of ' or other volunteer groups) in management of the Canberra Nature Park *Indicators:* • Total number of groups • Total number of 'community work hours' devoted to management of reserves and other natural areas • Total area treated by volunteers in hectares • Level of support provided to ParkCare groups (budgets and Parks and Conservation Rangers)
6. Ten areas of conservation significance (including areas outside reserves) 'adopted' by ACT schools or higher learning institutions as sites for nature-based education *Indicators:* • Number of reserves or other natural areas adopted and actively used by schools or higher learning institutes • Number of students involved in learning activities in these sites
7. Increased community understanding of, and support for, the protection of the ACT's biodiversity *Indicators:* • Number of education campaigns delivered • Number of community surveys and consultation

5.2 Review

The Strategy will be comprehensively reviewed towards the end of its ten-year life to ensure that it continues to be able to provide up-to-date guidance on how to best manage and enhance biodiversity in the ACT and region. The Strategy is able to be updated from time to time if monitoring shows there is a need to review some actions and strategies before the comprehensive review.

6. Implementation

Implementation of the Strategy will be guided by two implementation plans covering two, five year periods: 2013–2018 (Implementation Plan 1); and 2019–2023 (Implementation Plan 2). The first plan accompanies this Strategy, and the second plan will be finalised by 2018 following a review by the ACT Conservator of Flora and Fauna, and in consideration of the 2015 State of the Environment Report by the Commissioner for Sustainability and the Environment.

Implementation of actions will be dependent upon the availability of funding. The ACT Government will focus efforts to secure resources for actions that demonstrate cost effectiveness in terms of responding to critical conservation priorities, and achieving the greatest positive conservation impacts. Activities which are currently unfunded remain future options for further consideration by government and other interested partners. If funding is not available, this may require activities to be re-scoped and undertaken within existing resources where possible.

6.1 Main implementation mechanisms

Implementation Plan 1 will be delivered through a range of mechanisms that best suits the nature of the action, the funding source, land tenure, and stakeholder interests and abilities. Key mechanisms will include:

Government land management – Parks and City Services (PaCS) in the Territory and Municipal Services Directorate manages over 70% of land in the ACT, including urban green space, nature reserves, national parks, catchment areas and softwood forest plantations. As a major land manager, PaCS will help deliver many of the strategies actions through routine land management responsibilities such as control of pest animals and weeds in certain areas, delivery of maintenance and planting programs, implementing reserve operation plans, fire management, and supporting volunteers (see also Box 5). Government land managers will be encouraged to align normal operations with the strategic priorities identified in the Strategy and make funding cases around these priorities – particularly ensuring that management effort is prioritised toward the focal landscapes identified in the Strategy (see Map 2).

Non-government land management – rural landholders and large institutional landholders such as ACTEW, the Australian Government, and Canberra Airport will contribute towards many of the actions of the Strategy. Voluntary participation in priority landscape actions (e.g. woodland restoration), helping to implement the weed and pest animal strategies through routine land management, and supporting improved catchment management (e.g. stabilising erosion) will be core areas where non government land managers may assist.

Community delivery – strengthening community engagement will be an important component to achieve many of the actions in the Strategy. For example, ParkCare groups will continue to be supported through major restoration projects to help manage Canberra Nature Park, and carry out on ground works that contribute to restoring and managing degraded areas within reserves. Citizen Science, such as monitoring of water quality, will help inform where investments need to be made across priority landscapes.

Projects and new initiatives – priority landscape actions, due to their size and complexity, will often be delivered through large projects that often involve multiple partners. The Grassy Woodland Restoration Project (see Map 7 and Box 9) and the Upper Murrumbidgee Demonstration Reach (ACT Government, 2010) projects are two ongoing examples of this project based approach. These projects involve multiple funding sources and multiple partners from government, industry, researchers and the wider community. New initiatives will arise over the life of the Strategy as funding becomes available through ACT and external sources such as the Australian Government.

Government programs – ACT Environment Grants, administered by the ACT Government are designed to assist the community carry out worthwhile environmental projects. Projects should align with actions in the Strategy to ensure consolidation of effort.

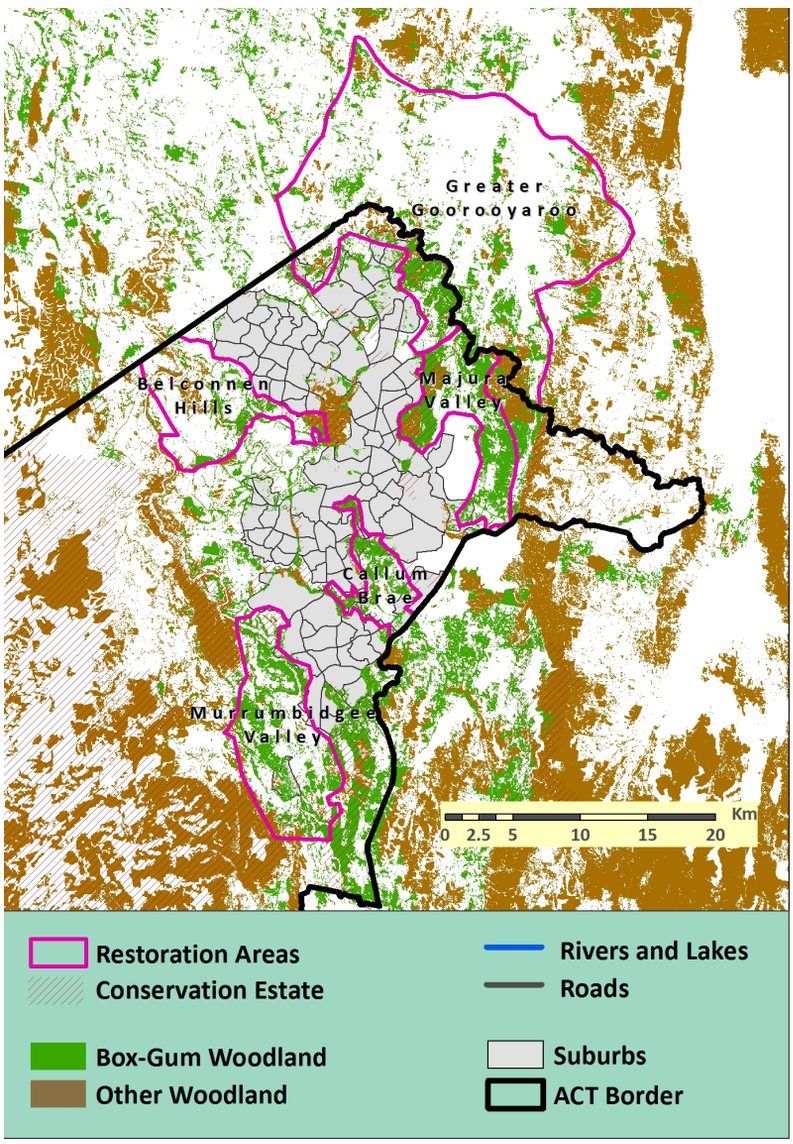
Research – research will inform many of the planning and on-ground actions in the Strategy. For example, research on grazing in woodland ecosystems (see Box 7) will inform many of the actions under Strategy 2 (e.g. Action 3 - manage total grazing pressure on ecosystem function in reserves).

6.2 Funding and prioritising investment within landscapes

Funding and other resources for implementing actions in the Strategy will come from a variety of sources, such as the ACT Government, Australian Government (see Box 4), leveraging resources and effort from partners (e.g. complementary restoration projects, relevant research) and voluntary contributions (volunteer effort and expertise).

Implementation of actions will be dependent upon the availability of funding. Relevant ACT Government directorates will focus efforts to secure resources for actions that demonstrate cost effectiveness in terms of responding to critical conservation priorities, and achieving the greatest positive conservation impacts. Activities which remain unfunded will become options for further investigation, which may require activities to be re-scoped and undertaken within existing resources where possible.

A core component of the Strategy relates to restoration and management of landscapes. Prioritising overall investment efforts across landscapes will be driven by the interest of relevant stakeholders, and will be dependent upon the availability of funding. An example of how investment has already been prioritised is outlined in Map 7. Actions undertaken or funded by the ACT Government will, wherever possible, align with the priorities outlined in the Strategy.



Map 7: Priority restoration areas for grassy woodlands in the ACT

Box 9 : Grassy Woodland Restoration Project in the ACT

The ACT Woodland Restoration Project ($1million, 2011–2014), and Restore ACT Goorooyarro Project ($2.15million, 2012–2018) are strategic responses to address the extensive historical clearing of lowland woodlands in the region. These projects address conservation priorities outlined in the ACT Lowland Woodland Conservation Strategy (Action Plan 27).

Both projects will work within the large grassy woodland blocks identified in map 7 to enhance condition and connectivity of native vegetation. These projects will also enhance certain vegetation remnants outside these areas to provide broader scale connectivity between the large woodland blocks, facilitating movement of native wildlife across the ACT. These projects complement the extensive work carried out by ParkCare and other groups in Canberra's Nature Parks.

Appendix 1

Glossary

Adaptive capacity – the ability or potential of a system to respond successfully to climate variability and change.

Alpine – areas above the regional upper limit for trees, occuring at approximately 1830 metres on the Australian mainland.

Amenity – urban environmental amenities are defined as the natural assets, including green spaces, that are aesthetic, ecological, and economic in nature. It also includes ares that have a physical or psychological effect on human health, such as pollution control, noise abatement and the provision of recreational opportunities.

Biodiversity (biological diversity) – the variability among living organisms from all sources (including terrestrial, aquatic, marine and other ecosystems and the ecological complexes of which they are part), at all levels of organisation, including genetic diversity, species diversity and ecosystem diversity.

Bioregion –a geographic area characterised by a combination of physical and biological characteristics; for example, terrain, climate and ecological communities. Bioregions are a useful way to analyse patterns of biodiversity.

Buffer – buffer zones are areas created to enhance the protection of a conservation area, often peripheral to it, inside or outside. Within buffer zones, resource use is managed to reduce the negative impacts of restrictions on the neighbouring communities.

Connectivity conservation – a management approach that focuses on the maintenance and restoration of functioning natural ecosystems across landscapes and marine areas, and requires systematic conservation planning that: identifies management responses at multiple scales; uses whole-of-landscape approaches; and takes into account the dynamics of climate change. Connectivity is built around core habitats (also known as refugia), some of which are protected in reserves, which are linked and buffered across different land use zones in ways that maintain critical ecological and evolutionary processes and thereby strengthen the resilience of biodiversity.

Conservation – the protection, preservation, management or restoration of biodiversity.

Connectivity corridors – elements of the landscape which, by linking otherwise isolated areas, permit movement of organisms or genetic flows across the landscape. This is a more general term than wildlife corridors.

Dispersal – an ecological process that involves the movement of an individual or multiple individuals away from the population in which they were born to another location, or population, where they will settle and reproduce.

Ecologically isolated – when reserves are inadequately connected, native vegetation can become ecologically isolated, leaving it and the species which live there vulnerable to threats, including those associated with climate change or genetic isolation.

Ecosystem – a dynamic combination of plant, animal and micro-organism communities and their non-living environment (e.g. soil, water and the climatic regime) interacting as a functional unit. Examples of types of ecosystems include forests, wetlands, grasslands and tundra.

Ecosystem services – the functioning of natural ecosystems provide services essential to human survival and wellbeing. Natural ecosystems maintain the atmosphere; provide clean water; control soil erosion, pollution and pests; pollinate plants; and provide many other essential processes. The language of ecosystem services has emerged in recent decades as a way of representing the significance of the benefits humans derive from natural systems.

Fragmentation – the result of removal (usually by clearing) of large parts of a natural area, resulting in the retention of only small parts (fragments or remnants) of habitat. Fragmentation is an issue for marine and other aquatic environments as well as terrestrial environments.

Habitat – the locality or natural home in which a plant, animal or a group of closely associated organisms live.

Lowland – in the context of the ACT, the 750 metre contour separates upland and lowland areas. In the ACT, lowland relates to local relief rather than landforms on a continental scale, and is commonly referred to as the valley floor.

Modified ecosystems – areas where there is human development or disturbance evident throughout the landscape.

Novel ecosystems – ecosystems that differ in composition and/or function from present and past as an almost inevitable consequence of changing species distributions and environmental alteration through climate and land use change.

Open space – under the Territory Plan, the formal open space network of Canberra includes pedestrian ways, sportsgrounds, urban parks and other landscaped spaces. The urban edge has a complementary open space network, which is associated with Canberra's hills, ridges and major river corridors.

Pest – an exotic species that causes serious social, environmental or economic damage to a valued resource.

Refugia (plural of refugium) – a refugium is an area that has escaped or will escape changes occurring elsewhere and continues to provide a suitable habitat for a species which would not be able to survive under prevailing conditions. Climate change refugia are used in reference to areas that may provide habitat for species displaced as the climate changes.

Remnant vegetation / remnant bushland – those patches of native trees, shrubs and grasses that remain following significant fragmentation of a landscape.

Reserve – .A reserve is a protected area. A protected area is a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values.

Resilience – the capacity of a system to absorb disturbances and reorganise while undergoing change so as to retain essentially the same function, structure, identity and feedbacks.

Restore – ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed.

Riparian – an area of terrestrial land adjacent to a water body that is affected by periodic inundation and hydraulic disturbance. As such it contains a suite of landforms and groups of associated vegetation communities that are different to the broader adjacent terrestrial lands.

Riverine – includes the land adjacent to the river or stream that is affected by periodic flooding (i.e. the riparian zone) as well as the river and its bed.

Terrestrial – literally means 'of the Earth'. It refers to environments other than aquatic or marine environments, and includes subterranean environments.

Threatened – threatened species or ecological communities are those threatened with extinction or destruction as identified through legislation.

Threatening process – in relation to a species or ecological community, this refers to a process that threatens, or may threaten, the survival, abundance or evolution of the species or community.

Upland – in the context of the ACT, the 750 metre contour separates upland and lowland areas.

Weed – environmental weeds or invasive weeds are exotic plant species that invade native vegetation and represent a threat to the conservation values of natural ecosystems.

Appendix 2

ACT legislation, policy and planning framework – Nature conservation

Legislation	Related strategies and ACT-wide plans	Action Plans, plans of management, and operational plans
Nature Conservation Act 1980 • Threatened species listing • Threatened species action plans • Licensing of use of plants and animals *Pest Plants and Animals Act 2005* • Listing of pest plants and animals • Development of pest animal management plans *Fisheries Act 2000* • Development of fish management plans • Declarations of noxious fish • Licensing *Planning and Development Act 2007* • Land use planning • Leasing • Environmental impact assessment processes • Land management agreements *Tree Protection Act 2005* *Environment Protection Act 1997* *Emergencies Act 2004* *Commissioner for Sustainability and the Environment Act 1993* • ACT State of the Environment Reporting • Investigation reports *Water Resources Act 2007* *Heritage Act 2004*	Nature Conservation Strategy ACT Climate Change Strategy ACT Natural Resource Management Strategy ACT Weeds Strategy ACT Pest Animal Management Strategy ACT Planning Strategy Territory Plan Strategic Bushfire Management Plan for the ACT Think Water, Act Water Kangaroo Management Plan	Action plans that support the management and monitoring of ACT threatened species and ecological communities including: A Subalpine Herb (5); Northern Corroboree Frog (6); Brush-tailed Rock-wallaby (22); ACT Aquatic Species & Riparian Zone Conservation Strategy 2007 (29); ACT Lowland Woodland Conservation Strategy 2004 (27); ACT Lowland Native Grassland Conservation Strategy 2008 (28); Spotted-tailed Quoll (30). Plans of management: Namadgi National Park (2010); Tidbinbilla (draft 2012); Canberra Nature Park (1999); Jerrabomberra Wetlands Nature Reserve (2010); Murrumbidgee River Corridor (1998); Lower Molonglo River corridor (2001); Googong Foreshores (draft 2012). Regional fire management plans: Gudgenby, Tennant, Tidbinbilla, Tuggeranong, Cotter Dam, Canberra, Bungendore, Umburra, Hall. 2012–2019 Environmental Weed Control Operations Plan Lake Burley Griffin Willow Management Plan Vertebrate pest management annual operations plans Pest animal management plans Strategic Management Plan – Lower Cotter Catchment

Appendix 3

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