

Australian Capital Territory

Planning and Development (Tidbinbilla) Plan of Management 2012

Disallowable instrument DI2012—193

made under the

Planning and Development Act 2007, Section 330 (Plans of management—notification, presentation, disallowance and date of effect)

1 Name of instrument

This instrument is the *Planning and Development (Tidbinbilla) Plan of Management 2012*.

2 Commencement

This instrument commences in accordance with section 330(2) (a) of the *Planning and Development Act 2007* (the Act).

3 Approval of plan of management

Pursuant to section 327 (3) (a) of the Act, I approve the Tidbinbilla Plan of Management 2012 (ISBN 978-0-9871175-1-9) attached to this instrument.

Simon Corbell MLA
Minister for the Environment and Sustainable Development
7 August 2012

Tidbinbilla

PLAN OF MANAGEMENT 2012



ACT
Government

Tidbinbilla Nature Reserve Birrigai



Tidbinbilla

Tidbinbilla Nature Reserve
Birrigai

Plan of Management 2012





© Australian Capital Territory 2012

ISBN 978-0-9871175-1-9

Conservation Series: ISSN 1036-0441:28

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced without the written permission of the Territory and Municipal Services Directorate, PO Box 158, Canberra ACT 2601.

Disclaimer: Any representation, statement, opinion, advice, information or data expressed or implied in this publication is made in good faith but on the basis that the ACT Government, its agents and employees are not liable (whether by reason or negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement, advice, information or data referred to above.

Published by the Territory and Municipal Services Directorate

Enquiries: Phone Canberra Connect on 13 22 81

Website: www.tams.act.gov.au

Design: Big Island Graphics, Canberra

Printed on recycled paper

VISION

Tidbinbilla is a unique place to explore our natural world

Places that tell a story of human presence over millennia

'As I walk through this beautiful country of mine, I stop, look and listen and remember as the spirits from my ancestors surround me.

That makes me stand tall and proud of who I am, a Ngunnawal warrior of today.'

CARL BROWN,
NGUNNAWAL ELDER

Ngunnawal people have always lived here. In this place we sang and danced and laughed. Young men became wise men. The sky and earth gave us food and water. Then others came.

SIGNBOARD ON THE
BIRRIGAI TIME TRAIL

'The surrounding farms remind us of our dependence on the land and that there is more than our urban way of life.'

FIONA SPIER (PRESIDENT,
FRIENDS OF TIDBINBILLA)

A beautiful natural setting

'Those who contemplate the beauty of the earth will find reserves of strength that will endure as long as life lasts.'

RACHEL CARSON, BIOLOGIST
AND WRITER, 1907-1964

'My vision ... is for people to continue to love and respect Tidbinbilla's simple beauty.'

FIONA SPIER (PRESIDENT,
FRIENDS OF TIDBINBILLA)

'I go to nature to be soothed and healed; to have my senses put in tune once more.'

JOHN BURROUGHS,
NATURALIST, 1837-1921

An outdoor experience that is enjoyable, educational and inspirational

'Sometimes they explore into the mountain forests, watching and listening to the cascading mountain streams, which glisten over rocks beside dipping ferns.'

WENDY RAINBIRD,
SOUTHERN ACT CATCHMENT GROUP

'I see a close working relationship between ... Birrigai and Tidbinbilla, where visiting schools to Birrigai are taken to the reserve...and tutored by specialist rangers and teachers.'

PAT JEFFREY (PRESIDENT)
TIDBINBILLA PIONEERS ASSOCIATION

'Study nature, love nature. Stay close to nature. It will never fail you.'

FRANK LLOYD WRIGHT,
ARCHITECT, 1867-1959

Contents

Vision	3
Contents	5
Acknowledgments	8
Ministerial Foreword	9
Preface	10
Place Names	12
Chapter 1 Introduction	13
1.1 The Tidbinbilla Precinct	14
1.2 The 2003 Bushfire	15
1.3 Post-fire Planning and Recovery	15
1.4 Regional Setting	17
1.5 Management Plan: Purpose and Scope	18
1.6 Public Land at Tidbinbilla	18
1.7 Management Goals	20
1.8 Structure of the Management Plan	20
Chapter 2 Statement of Significance	21
2.1 Introduction	22
2.2 Valuing Places	22
2.3 Tidbinbilla: Statement of Significance	24
Chapter 3 Management Framework	27
3.1 International Context	28
3.2 National Context	28
3.3 Legislation	29
3.4 ACT Planning Framework	31
3.5 ACT Strategies and Plans	31
3.6 Key Desired Outcomes for the Management Plan	32
Chapter 4 Community and Corporate Involvement	35
4.1 Primary Management Objectives	36
4.2 Community Involvement	36
4.3 Corporate Partnerships	37
4.4 Concessions and Commercial Activities	38
4.5 Neighbours	38
Chapter 5 Management Zones	41
5.1 Reserve Zoning	42
5.2 Management Policies for Defined Management Zones	43
Chapter 6 Natural Values	49
6.1 Primary Management Objectives	50
6.2 Background	50
6.3 Climate and Climate Change	50
6.4 Landscape	52
6.5 Geodiversity	53
6.6 Hydrology and Water Management	54
6.7 Native Vegetation	56
6.8 Native Animals	59

6.9	Pest Species	61
	Pest Plant Management.....	62
	Pest Animal Management.....	64
6.10	Fire Ecology	65
6.11	Ecological Rehabilitation.....	67
Chapter 7	Cultural Values.....	69
7.1	Primary Management Objective.....	70
7.2	Background	70
7.3	Aboriginal Cultural Heritage	70
7.4	European Cultural Heritage.....	71
7.5	Cultural Heritage Values.....	72
7.6	Recognising Cultural Heritage Values.....	72
7.7	Management Considerations and Issues.....	75
	Aboriginal Cultural Heritage	75
	European Cultural Heritage.....	77
7.8	Objectives, Policies and Actions: Cultural Heritage.....	79
Chapter 8	Recreation and Tourism	85
8.1	Primary Management Objectives.....	86
8.2	Background	86
8.3	Management Considerations and Issues.....	87
8.4	Managing Visitor Impacts	88
8.5	Managing Visitor Safety	89
8.6	Communication.....	90
8.7	Nature Based Tourism	91
8.8	Recreational Activities	94
8.9	Recreation Facilities.....	102
8.10	Staying Overnight.....	103
Chapter 9	Education and Interpretation.....	105
9.1	Primary Management Objectives.....	106
9.2	Background	106
9.3	Management Considerations and Issues.....	107
9.4	Education	108
9.5	Birrigai at Tidbinbilla.....	109
9.6	Interpretation.....	109
Chapter 10	Research and Monitoring	111
10.1	Primary Management Objectives.....	112
10.2	Background	112
10.3	Management Considerations and Issues.....	112
10.4	Wildlife Collection.....	113
	General Captive Display	114
	Threatened Species.....	114
10.5	Survey, Monitoring and Research.....	115
Chapter 11	Environmental Planning, Protection and Management.....	119
11.1	Fire Management	120
11.2	Environmental Impact Assessment.....	121
11.3	Management Operations and Environmental Protection.....	121
11.4	Resource Extraction.....	123
11.5	Access management.....	124
11.6	Law Enforcement.....	124
11.7	Implementation of the Management Plan	124
11.8	Tidbinbilla Master Plan	125

Appendices	127
APPENDIX 1 ACT Planning and Land Management Context	128
APPENDIX 2 A Brief History of the Planning and Management of Tidbinbilla Nature Reserve	130
APPENDIX 3 Vegetation Communities	132
APPENDIX 4 Tidbinbilla Fauna: Species Lists	134
APPENDIX 5 National Heritage Management Principles	139
APPENDIX 6 Management Actions and Priorities	140
GLOSSARY AND ABBREVIATIONS	149
REFERENCES	153

Figures

1.1 Location of Tidbinbilla in the ACT	16
1.2 Tidbinbilla: Territory Plan Overlays.....	19
5.1 Tidbinbilla: Primary Management Zones.....	44

Tables

3.1 ACT legislation relevant to the management of Tidbinbilla	30
5.1 Tidbinbilla: primary management zones	43
5.2 Management policies for defined management zones at Tidbinbilla related to visitor use, access and infrastructure	45
6.1 Threatened animal species occurring at or recorded from Tidbinbilla and their conservation status (ACT, NSW and Commonwealth legislation only)	59
6.2 Pest animals at Tidbinbilla: status and control programs.....	64
7.1 Identified heritage places and objects at Tidbinbilla	73
8.1 General policies for recreational activities and permitted/prohibited activities in the Tidbinbilla management zones	99

Acknowledgments

This management plan was prepared under the direction of the Tidbinbilla Strategic Board. The Board provided the vision for Tidbinbilla and the vision page.

Many people and organisations have provided advice and assistance in the preparation of this management plan for the Tidbinbilla precinct. Particular thanks go to:

- members of a Community Reference Group, the ACT Natural Resource Management Advisory Committee, the United Ngunnawal Elders Council, and the Representative Aboriginal Organisations in the region
- individuals and organisations who made submissions on the draft management plan and/or contributed to an earlier discussion paper and workshops
- staff of the Territory and Municipal Services Directorate and the Education and Training Directorate.

The plan was prepared by Dr Kevin Frawley, in association with Conservation Planning and Research, in the Policy Division, Environment and Sustainable Development Directorate, on behalf of the Territory and Municipal Services Directorate.

Ministerial Foreword



Tidbinbilla is a special place to many people. Aboriginal people occupied the area more than 20,000 years ago and glimpses of this fascinating past are still evident within massive rock shelters and abundant scatterings of artefacts throughout the valley. Europeans pastoralists settled in the area from the 1830s and many still maintain a strong attachment to the area. Tidbinbilla's striking mountain ranges, spectacular granite outcrops, sheltered valleys, endearing wildlife, and popular recreation facilities have drawn visitors from the Canberra Region, interstate and overseas for more than half a century.

A devastating fire swept through the area in 2003 burning almost everything in its path. The ACT Government then made a decision to manage Tidbinbilla Nature Reserve, Birrigai and the former pine plantation at Jedbinbilla, as one entity: the Tidbinbilla Precinct. The former Gibraltar Creek pine plantation has recently been added to the precinct. Tidbinbilla, together with the adjacent Namadgi National Park, forms part of the heritage listed Australian Alps National Parks and Reserves.

Tidbinbilla's vegetation has made a dramatic recovery since the fires. The mountainside native forests and sub-alpine snow gums are rapidly regenerating. Grass trees once again characterise open slopes above the valley floor and tall wet forests and ferns are thriving in moist gullies. The diverse vegetation communities of Tidbinbilla provide habitats for over 160 species of birds as well as many native reptiles, mammals and fish.

The ACT Government's significant investment in new and improved facilities at Tidbinbilla and Birrigai has added to the attraction of the precinct as a popular destination for enjoying outdoor recreation and education activities. New facilities have also strengthened Tidbinbilla's role in biodiversity conservation. Breeding programs have been successfully established for threatened species such as the brush-tailed rock wallaby and the northern corroboree frog. The captive wildlife collection focuses on species from the South Eastern Highlands and Australian Alps bio-regions, selected endangered species, and species of special research or educational value.

The Tidbinbilla Plan of Management 2012 has been prepared under the *Planning and Development Act 2007* and outlines policies and actions to protect and enhance Tidbinbilla's natural and cultural heritage values over the next ten years. This plan of management also encourages the tourism potential of Tidbinbilla by allowing a range of low key accommodation options to be considered for the Tidbinbilla Valley.

I greatly appreciate the significant contributions that many individuals and community organisations have made to the development of this plan of management and I am delighted that the plan is now completed and ready for implementation.

A handwritten signature in black ink that reads "Katy Gallagher".

Katy Gallagher, MLA
Minister for Territory and Municipal Services

Preface

This plan of management has been prepared by the ACT Territory and Municipal Services Directorate for four Public Land areas now forming the Tidbinbilla precinct (hereafter referred to as 'Tidbinbilla'): Tidbinbilla Nature Reserve, Jedbinbilla and Gibraltar (former pine plantations), and Birrigai. All the land in Tidbinbilla is either National Park or Special Purpose Reserve under the *Planning and Development Act 2007*.

Tidbinbilla Nature Reserve (National Park, Special Purpose Reserve) is a well recognised and popular part of the ACT reserve system dating back to 1962 when the first land was acquired for a national park and fauna reserve. Following ACT self-government in 1989, the reserve became subject to ACT legislation under which a management plan was prepared in 1999. This precinct management plan replaces the 1999 plan for the nature reserve. Birrigai (Special Purpose Reserve) has operated as an outdoor and environmental education centre since 1979. Jedbinbilla (Special Purpose Reserve) and Gibraltar (National Park) have been incorporated into the precinct following the destruction of the pine plantations in the 2003 bushfire. The Planning and Development Act requires that all Public Land has a plan of management that sets out how land management objectives prescribed in the Act are to be pursued. Tidbinbilla Nature Reserve is now on the National Heritage List, as part of the Australian Alps National Parks and Reserves, for which there are certain obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).

Planning is a process that considers the past and present but looks to the future. It is focused on determining 'what should be' (usually defined by a series of objectives) and selecting suitable approaches to achieve those objectives. Planning can occur at different scales. In the ACT, the *National Capital Plan* (Cwlth) and the *Territory Plan* (ACT) determine in a broad sense which areas of land will be used for what purpose. Once land use has been determined, area management plans such as this *Tidbinbilla Plan of Management 2012* set out how such areas will be managed. At a more detailed level, site planning deals with the design for a particular area or facility (e.g. design of the Sanctuary at Tidbinbilla). This detailed planning may be done in a 'master plan'. In the management of Tidbinbilla, there is also a range of other planning and policy documents that inform or are related to the management plan but are not, in detail, part of the management plan.

The foundation of management planning for protected areas such as Tidbinbilla is the assessment of the values of the area. Determining the values of Tidbinbilla identifies the special characteristics that make the area worthy of being protected, and why people are inspired to visit the area, or consider it to be an important place. Many of the values of Tidbinbilla are shared with other components of the ACT reserve system and parts of the Australian Alps, including the neighbouring Namadgi National Park, but others relate to the distinctive features of Tidbinbilla.

Significant values of Tidbinbilla relate to:

- the landscape setting of the valleys framed by mountain peaks with massive granite tors
- the importance of the area to the local Aboriginal community and the density of Aboriginal artefacts and evidence, including deposits in some rock shelters, of thousands of years of daily life
- buildings and other evidence that provide links to the period of European settlement of the area
- the diversity of vegetation communities, including tall wet forests that have a limited distribution in the ACT, provide important habitat, and are an inspiration to visitors
- plant species, including ferns, orchids and grass trees that are uncommon in the ACT
- a wildlife collection that provides educational opportunities for visitors and facilitates research on, and recovery of, threatened species
- free-ranging wildlife, in particular, a large population of eastern grey kangaroos which is popular with visitors

- a range of recreational opportunities suited to different interests and abilities
- the contribution of Tidbinbilla to nature based tourism in the ACT
- the experiential learning programs at Birrigai covering outdoor education, environmental education and heritage studies
- opportunities for outdoor and environmental education
- opportunities for research.

In accordance with the time frame prescribed in the *Planning and Development Act 2007*, this management plan sets out directions for the management of Tidbinbilla for the next ten years. In that time the Tidbinbilla landscape will change as vegetation and ecological communities continue their post-fire recovery and recolonise former pine plantation areas; the components of the precinct become more integrated; and new facilities, activities and programs are established. This plan of management sets directions and priorities for management of Tidbinbilla, noting that new facilities will be subject to available resources. The plan identifies some matters where further investigation, consultation, and site planning are needed to resolve outstanding issues.

Place Names

In this document:

- 'Tidbinbilla' refers to the whole precinct.
- 'Tidbinbilla Nature Reserve' (or 'TNR') refers to the Special Purpose Reserve and National Park traditionally known as Tidbinbilla Nature Reserve (5033 hectares).
- 'Tidbinbilla Valley' refers to the valley floor area of Tidbinbilla Nature Reserve (Tidbinbilla River valley)(691 hectares).
- 'Birrigai' refers to the Special Purpose Reserve area comprising the built education centre and surrounding land (170 hectares).
- 'Birrigai at Tidbinbilla' refers to the buildings and associated infrastructure at Birrigai (formerly known as 'Birrigai Outdoor School').
- 'Jedbinbilla' (Special Purpose Reserve) refers to the former pine plantation, Block 60 Paddys River, which extends west of the Tidbinbilla River and north-west in the direction of Camels Hump (487 hectares).
- 'Wildlife Precinct' refers to the area centred on the Sanctuary and surrounds.
- 'Gibraltar' (National Park) Block 223 Paddys River, refers to the former Gibraltar Creek pine forest and areas of Special Purpose Reserve along the Corin Road that were managed by the former ACT Forests prior to the 2003 bushfire (785 hectares).



The National Reserve System is the cornerstone of our national efforts to protect terrestrial biodiversity. It stands as Australia's commitment to future generations that land vital to the survival of our unique native species, ecosystems and associated cultural values will be protected in perpetuity.

Australia's Strategy for the National Reserve System 2009–2030

1.1 The Tidbinbilla Precinct

This management plan is for the Tidbinbilla precinct (Tidbinbilla) which comprises four Public Land areas that were previously managed separately. These are:

- Tidbinbilla Nature Reserve
- Jedbinbilla (former pine plantation, Block 60 Paddys River)
- Gibraltar (former pine plantation, Block 223 Paddys River)
- Birrigai.

This *Tidbinbilla Plan of Management 2012* replaces the former management plan (ACT Government 1999a), which was for Tidbinbilla Nature Reserve only.

Tidbinbilla is located in the north-west quadrant of the ACT about 40 km from the Canberra city centre and covers an area of approximately 6466 hectares (Figure 1.1). The Tidbinbilla Valley is a large valley on the eastern edge of the series of ranges that dominate the western half of the ACT and provide a prominent backdrop to the city of Canberra. The valley floor is framed within the Tidbinbilla Range (north-west) and the Gibraltar Range (south-east). Birrigai occupies a smaller valley and foot-slopes at the eastern end of the Gibraltar Range. The sides of the Tidbinbilla Valley are steep and mostly heavily forested. Tree cover in the valley floors and lower slopes was cleared and thinned to varying degrees prior to the reservation of the land from the 1960s.

The Tidbinbilla area contains an important record of Aboriginal occupation in the region, dated to more than 20 000 years ago. Tidbinbilla, Namadgi National Park and adjacent lands have ongoing significance as the Country of the Ngunnawal people. The area also has a history of European settlement from the late 1830s and is a microcosm of rural land use history in the ACT region. Valuable and significant remnants of the past occupation by Aboriginal people and European settlers remain at Tidbinbilla despite the ravages of time and fire.

The proximity of Tidbinbilla Nature Reserve (TNR) to the Canberra urban area, the visitor facilities provided, and the opportunity to see Australian wildlife have resulted in a high level of use for both passive and active outdoor recreation. A particular feature of TNR is the wildlife collection which provides opportunities for visitors to see captive native wildlife in natural settings. TNR has also been involved in breeding and release programs for threatened species. The features of the reserve have resulted in it becoming a focal point for the promotion of nature based tourism (see **Glossary**) in the ACT.

Birrigai at Tidbinbilla (formerly Birrigai Outdoor School) has operated since 1979 providing experiential learning programs for school students in outdoor education, environmental education and heritage studies. On 1 July 2010, Birrigai management and facilities were transferred from the ACT Department of Education and Training (DET) to the Department of Territory and Municipal Services (TAMS), formalising the administrative amalgamation of Birrigai into the Tidbinbilla precinct. The Birrigai principal and teaching staff remain employees of DET, whilst all non-teaching staff are TAMS employees. The new governance arrangements allow for DET membership of the Tidbinbilla Strategic Board and the establishment of a Birrigai School Board, consistent with it remaining a school in special circumstances, under the *Education Act 2004* (ACT). It is intended to maintain and further develop the school-based roles for Birrigai at Tidbinbilla. In addition, it also provides conference, team-building and leadership programs and services to community organisations and works in partnership with TNR staff on joint educational experiences for visiting groups.

Jedbinbilla (Block 60 Paddys River) and Gibraltar (Block 223 Paddys River) were formerly pine plantations, destroyed in the 2003 bushfire. Jedbinbilla is on the lower slopes of the Tidbinbilla Valley and Gibraltar is on the south eastern side of the Gibraltar Range (Figure 1.2). Extensive native forest regeneration is occurring in these former plantations. In Gibraltar there are also a number of areas of native forest which were not cleared for pines (formerly identified as Special Purpose Reserve). Corin Forest Mountain Recreation Resort, leased land on the Corin Road, is outside the Tidbinbilla boundary.

1.2 The 2003 Bushfire

In January 2003 the bushfire that was to burn 165 000 hectares (70%) of the ACT, including 110 000 hectares of nature reserves and national parks, swept through Tidbinbilla. The fire was of high intensity (see **Glossary**) through much of Tidbinbilla, severely burning most of the vegetation and destroying some of the buildings, infrastructure and the wildlife collection. A major rebuilding and restoration program has been undertaken since the 2003 bushfire and the functions of the Tidbinbilla precinct re-established.

1.3 Post-fire Planning and Recovery

Following the 2003 fire, Tidbinbilla Nature Reserve was included in a general review of the future for non-urban land in the ACT (Non-Urban Study Steering Committee 2003a 2003b; Shaping Our Territory Implementation Group 2004). Following these studies, the ACT Government decided to amalgamate the management of Tidbinbilla Nature Reserve and Birrigai at Tidbinbilla; provide for limited accommodation in the precinct; retain the captive wildlife function; rehabilitate the former pine forest (Jedbinbilla) to native vegetation cover; and form a Tidbinbilla precinct consultative committee (Shaping Our Territory Implementation Group 2004; Stanhope 2004). In 2008 a Tidbinbilla Strategic Board was established.

In public consultation on the draft plan of management for Tidbinbilla, it was proposed that the area known as Gibraltar pines be added to Tidbinbilla. The Territory Plan has been amended (Technical Amendment No 2012-14) and this area is now classified as National Park.

Significant repair, reconstruction and new developments undertaken at Tidbinbilla since 2003 include:

- redevelopment of the wetlands area adjacent to the Tidbinbilla River (the Sanctuary) with an educational/interpretation focus
- refurbishment of the Ribbon Gum Theatre
- construction, repair and upgrading of fencing, car parks, walking tracks, signage and picnic/barbecue facilities
- a new veterinary clinic, animal husbandry facility and wildlife enclosures
- rebuilding of Nil Desperandum cottage and repair and stabilisation of Rock Valley homestead
- construction of the 'nature discovery' playground and associated facilities
- repair, rebuilding and new construction at Birrigai involving a new and extended administration building, a Learning Centre with theatre (replacing a former classroom), a new commercial grade kitchen, a new and expanded dormitory (Hatcliffe), new outdoor education and recreation infrastructure, repair and refurbishment of the Honyong dormitory, and construction of a new residence complex.

Figure 1.1 Location of Tidbinbilla in the ACT



1.4 Regional Setting

Tidbinbilla is an important and distinctive part of the ACT parks and reserves system. The precinct is located at the north-eastern extremity of the much larger Namadgi National Park (106 095 hectares) which comprises 46 per cent of the ACT (Figure 1.1). The precinct is bounded by:

- Namadgi National Park: Cotter River Catchment (west and south)
- Lower Cotter Catchment: Public Land for protection of water supply (north):
- Pierces Creek Forest: former commercial pine plantation (north-east):
- Rural leasehold land (east and south-east)
- The Corin Road (south-east).

The whole of the western boundary of Tidbinbilla borders the Cotter Catchment, which is the primary water supply for Canberra. The protection of this water resource is one of the highest priorities for the management of Namadgi National Park (ACT Government 2010a). As part of the protection of the catchment, no camping is allowed in the Bendora and Lower Cotter sections of the Cotter Catchment. Tidbinbilla is in the Upper Murrumbidgee River Catchment, as the Tidbinbilla River is connected to the Murrumbidgee River via the Paddys and Cotter rivers. Tidbinbilla is part of a spectrum of Public Land areas in the ACT ranging from the Bimberi Wilderness in Namadgi National Park to areas of urban open space. Between Tidbinbilla and the city is the Murrumbidgee River along which there are Public Land reserves with developed recreational facilities. The Murrumbidgee River Corridor and Tidbinbilla are linked via Tourist Drive 5 which provides access to Mt Stromlo Observatory, Cotter Reserve, Canberra Deep Space Communication Complex, Tharwa, Namadgi Visitor Centre, and Lanyon Homestead.

Commonly (but inexactly) referred to as the 'Brindabellas', the mountains to the west/south-west of Canberra are made up of a series of ranges including Tidbinbilla and Gibraltar. These mountain ranges at 1200 to 1900 m elevation provide a prominent northern rampart to the Australian Alps, connecting to the Brindabella National Park (NSW) in the north and Kosciuszko National Park (NSW) to the south. Subalpine vegetation communities occur along most the Tidbinbilla Range above 1220 m and in the vicinity of Billy Billy Rocks.

Tidbinbilla forms part of the Australian Alps national parks which protect the alpine and subalpine environments of mainland Australia stretching from the Brindabella Range (NSW and ACT), through the Snowy Mountains (NSW) and along the Great Dividing Range in Victoria. This mountainous region, snow capped in winter, is a unique part of the predominately dry and flat Australian continent. The parks comprise over 1.6 million hectares of protected areas including eleven parks and reserves (see s. 3.2).

While most of Tidbinbilla borders reserved Public Land or former forestry plantation, there are a small number of rural leases adjacent to the eastern/south-eastern boundary. These leases are located along Tourist Drive 5 and the rural landscape of the Paddys River valley is an important part of the visitor experience in approaching Tidbinbilla. While there are different management objectives for Tidbinbilla and adjacent rural lands, it is desirable that complementary management arrangements are made for boundary areas. Management of rural lands can make an important contribution to ecological connectivity (see **Glossary**), in this instance between Namadgi/Tidbinbilla and the Bullen Range Nature Reserve and Murrumbidgee River Corridor.

1.5 Management Plan: Purpose and Scope

This plan of management for Tidbinbilla has been prepared under the provisions of the *Planning and Development Act 2007*. The plan is a legal document that outlines how the precinct is to be managed for the next ten years and until a new plan of management is prepared at that time.

From a *statutory perspective*, the primary purpose of a management plan is to meet the requirements of the Planning and Development Act (Part 10.3, 10.4) that an area of Public Land must be managed in accordance with both the management objectives applying to the area (Schedule 3 of the Act) and a management plan prepared by the 'custodian' of the land (see **Glossary**).

From a *management and operational perspective*, a management plan outlines what is important about Tidbinbilla (its values), what is hoped to be achieved in the management of the area (objectives), and the means by which the objectives will be attained (policies and actions). A management plan is intended to provide direction and guidance to the custodian of the land, management staff, volunteers, visitors, proponents of particular activities and uses, neighbours, and others with an interest in the area.

The provisions of the plan are intended to fulfil all international, national, ACT, regional and local obligations that are relevant to the management of the natural environment, cultural heritage, built facilities and infrastructure in the Tidbinbilla precinct. Detailed management prescriptions and operations may be referred to, but are not included in the plan. A range of planning and policy documents inform or are related to the management plan but are not, in detail, part of the plan. These documents are mainly of two types: *functional* plans (e.g. fire management plan, wildlife collection plan, threatened species recovery plan) and *organisational* plans (e.g. corporate plan, business plan, workforce plan, incident plan, financial plan).

1.6 Public Land at Tidbinbilla

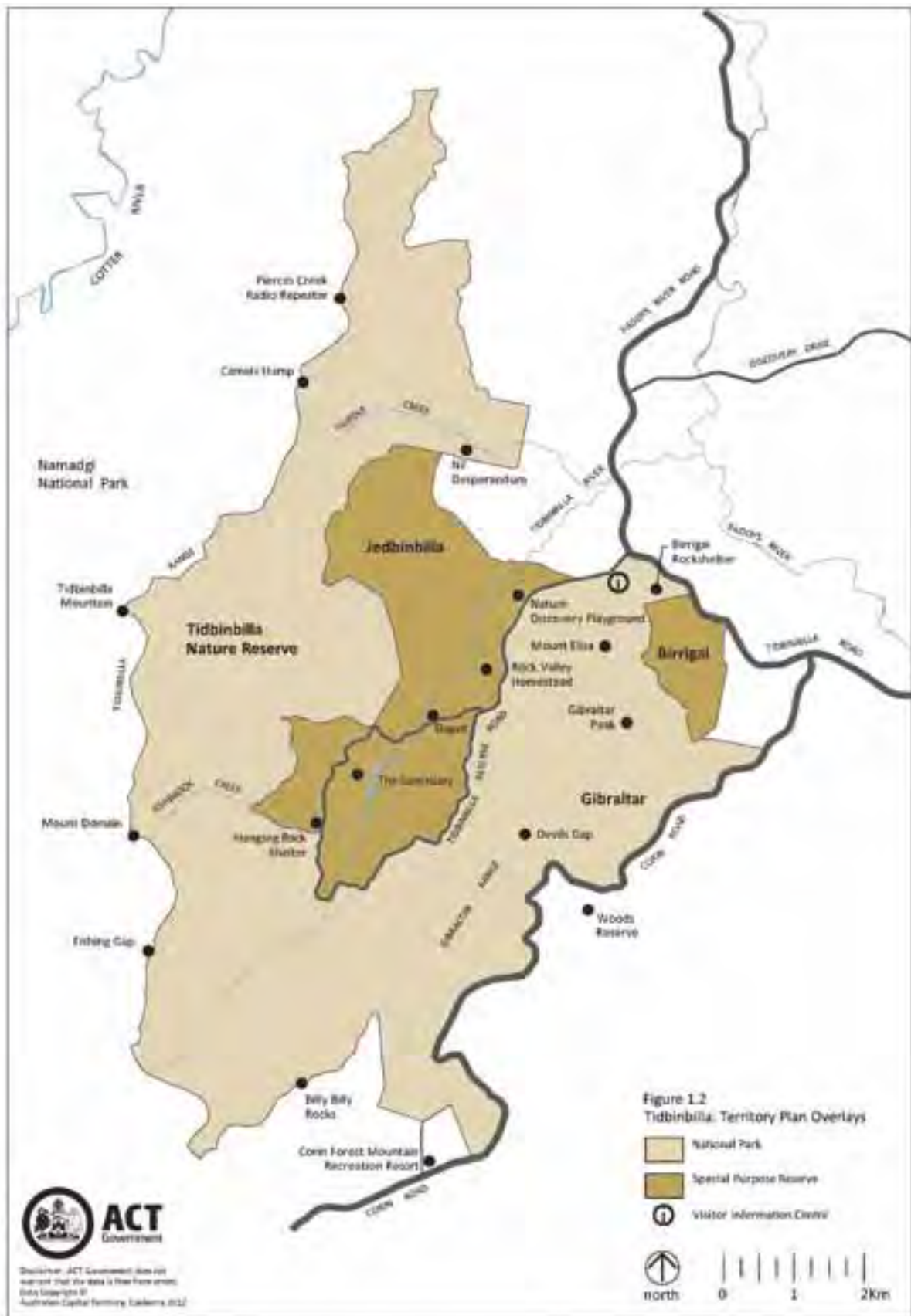
The Tidbinbilla precinct is Public Land under the *Planning and Development Act 2007*. The Territory Plan categories of Public Land (See Figure 1.2) are:

- Tidbinbilla Nature Reserve: National Park, Special Purpose Reserve
- Jedbinbilla: Special Purpose Reserve
- Gibraltar: National Park
- Birrigai: Special Purpose Reserve.

Objectives for the two categories of Public Land at Tidbinbilla under the Planning and Development Act are:

- | | |
|--------------------------------|---|
| National Park | <ol style="list-style-type: none"> 1. To conserve the natural environment 2. To provide for public use of the area for recreation, education and research |
| Special Purpose Reserve | <ol style="list-style-type: none"> 1. To provide for public and community use of the area for recreation, education and research |

Figure 1.2 Tidbinbilla: Territory Plan Overlays



1.7 Management Goals

Considering the prescribed management objectives above and the values of Tidbinbilla, the following goals are defined for the management of the precinct:

The natural and cultural values of Tidbinbilla are conserved* in perpetuity.

Tidbinbilla is highly valued by Canberra residents and visitors for its recreational, educational and research opportunities related to the natural and cultural values of the area.

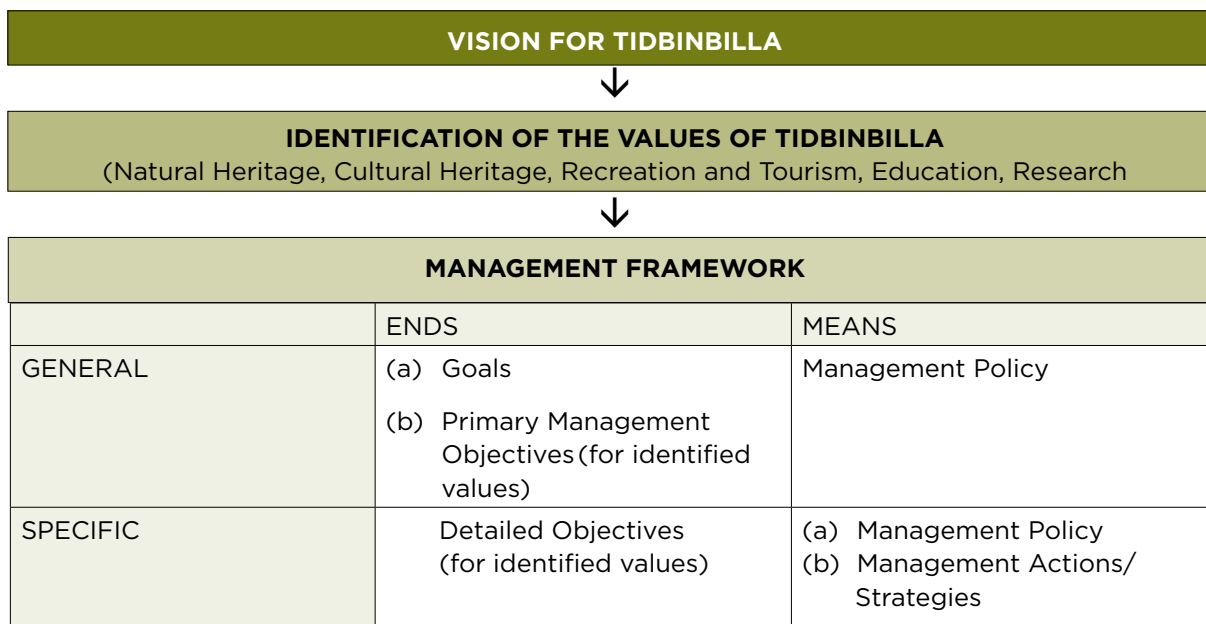
* Conservation of Natural and Cultural Values:

Natural Heritage: Conservation means all the processes and actions of looking after a place so as to retain its natural significance and always includes protection, maintenance and monitoring. It may also involve actions to repair degradation and includes conserving natural processes of change (*Australian Natural Heritage Charter*, 2nd edition (Australian Heritage Commission 2002a)). Conservation, as applied to species and ecological communities, refers to all the processes and actions aimed at the maintenance of those entities in perpetuity. This is also expressed as the 'conservation of biological diversity'.

Cultural Heritage: Conservation means all the processes of looking after a place so as to retain its cultural significance. Cultural significance means aesthetic, scientific, social or spiritual value for past, present or future generations (*Australia ICOMOS Burra Charter, 1999* (Australia ICOMOS1999)). Conservation may also be applied to specific objects.

1.8 Structure of the Management Plan

The following structure has been used in preparing the management plan:



Statement of Significance



A place's natural significance and cultural significance (aesthetic, historic, scientific, social or spiritual value) should be acknowledged in any management document, and ideally presented as a statement of significance. A statement of significance sets out why a place is important.

Protecting Natural Heritage: using the Australian Natural Heritage Charter (Australian Heritage Commission 2003)

2.1 Introduction

Related to their former or current purposes, the four components of Tidbinbilla have different histories. Tidbinbilla Nature Reserve is a well recognised and popular part of the ACT reserve system dating back to 1962 when the first land was acquired for a national park and fauna reserve (see Appendix 2 for a brief history of the planning and management of TNR). Tidbinbilla was the first reservation for nature conservation in the mountainous country in the western half of the ACT. The adjacent Cotter Catchment had been protected since 1914 for water supply purposes (NCDC 1986).

Established more recently (1979), Birrigai at Tidbinbilla (formerly Birrigai Outdoor School), has provided day and overnight environmental and outdoor education programs. These have been attended by many of Canberra's primary school children at some stage during their schooling.

The former pine plantations in Block 60 Paddys River (now Jedbinbilla) and Block 223 Paddys River (now Gibraltar) were part of the major expansion of softwood plantations undertaken in the 1960s and 1970s. In time, the current native regeneration will create a more harmonious and scenic natural environment however, for some time control of pine wildings and management of uncontrolled off-road vehicle use and environmental damage will be an issue.

A range of experiences over the years has given Tidbinbilla meaning to visitors and to those connected in other ways. These experiences include the activities by school children in visits to Birrigai at Tidbinbilla; gatherings of families and friends in a natural setting in the picnic areas of TNR; observation of free-ranging and captive wildlife, including by overseas visitors; the interactions of neighbours and reserve managers on boundary matters and to fight fires; involvement in volunteer activities; research projects related to the natural and cultural environment; more strenuous and adventurous activities such as rock climbing and bushwalking; and employment in forestry, reserve management or teaching at Birrigai at Tidbinbilla.

2.2 Valuing Places

For most people, the significance of a place arises from a combination of many values (see **Glossary**). The identification of the values attached to a place is an essential first step in formulating management requirements and preparing a management plan. *Core values* relate to natural or cultural heritage, though the two may be inter-related, overlap and are considered inseparable by some people e.g. many indigenous people as well non-indigenous people with strong cultural connections to nature (Australian Heritage Commission 2002a; Worboys et al. 2005). *Derived values* (e.g. recreational, tourism, educational, scientific, economic) are based on these core values (NSW NPWS 2006). A second essential step is to assess the significance of the values and the components that make up a category of values. There are various criteria that are used to assist in the assessment of significance e.g. the presence of places and objects on statutory heritage registers.

Some values are geographically based and can be assigned to a particular site (e.g. Nil Desperandum) or a group of sites (e.g. the granite tors derived from the Murrumbidgee Batholith). Others are less place-specific and may refer to a value held by the whole protected area (e.g. recreation and education opportunities). Some values may be more intangible. Social value is based on the attachment of people to places such as Tidbinbilla and is often represented by the ongoing involvement with the place (e.g. Friends of Tidbinbilla, Tidbinbilla Pioneers Association, the local Aboriginal community).

Natural significance means the importance of ecosystems, biodiversity and geodiversity for their existence value or for present or future generations, in terms of their scientific, social, aesthetic and life-support value (*Australian Natural Heritage Charter*. 2nd edition (Australian Heritage Commission 2002a)).

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations (*Australia ICOMOS Burra Charter, 1999* (Australia ICOMOS 1999)).

The landscape of Tidbinbilla can be seen as having overlapping or layered values that are both natural and cultural. The natural environment of the area contains exposed relict geological features from hundreds of millions of years ago, diverse ecological communities with plants and animals that have ancient ancestry, evidence of many thousands of years of occupation by Aboriginal people, as well as more recent uses by European settlers. Many values are inter-related e.g. the tall alpine ash (*Eucalyptus delegatensis*) community only occurs on the granitic soils near Billy Billy Rocks, not on the sedimentary and metamorphic rocks at the same altitude on the Tidbinbilla Range (Ingwersen 1985a, 1985b). Some are composites of other values e.g. ecosystem services, a concept that refers to the products of natural systems that benefit people; PMSEIC 2002) (see **Glossary**).

Multiple values build richness in some places, but they may also create conflicts as to which should be given priority. The decision to conserve one value may contribute to the degradation of another. Management requires explicit information about each value and its significance so that important values can be conserved and priorities determined for management effort (NSW NPWS 2006). The identification and assessment of values is not independent of the wider social setting, as is evident by the much greater prominence given to Aboriginal cultural heritage in recent times.

The basis for preparing this draft plan of management is the development of objectives and policies for the following categories of values:

- Natural Heritage
- Cultural Heritage
- Recreation and Tourism
- Education
- Research.

2.3 Tidbinbilla: Statement of Significance

Summary

Tidbinbilla is a scenic landscape, combining foothill valleys and mountain peaks. The area contains significant natural and cultural heritage values, and recreational, tourism, educational and research opportunities.

Key relationships

Tidbinbilla is part of the South Eastern Highlands bioregion and is adjacent to Namadgi National Park. Together, these reserves are a significant component of the Australian Alps national parks. Tidbinbilla is recognised as an important landscape element of the National Capital. The area is linked to traditional Aboriginal use of the mountains and foothills; to historic land uses in the region; and to the use of the mountain areas for recreation, education and research. Tidbinbilla Nature Reserve is included in the National Heritage List as part of the Australian Alps National Parks and Reserves. The Australian Alps are recognised by the World Conservation Union (IUCN) as one of the 167 world centres of biodiversity. Tidbinbilla is part of the Upper Murrumbidgee River Catchment.

Natural heritage

The landscape of Tidbinbilla is varied and spectacular, ranging from the dominant peaks of Mt Tidbinbilla and Mt Domain through sub-alpine woodland to tall wet forest, sheltered streams and open grassland. Spectacular exposed granite tors, even more evident since the 2003 fire, are a characteristic landscape feature. The 400 million year old granodiorite from which the tors derive is one of the geological features of interest in the ACT. Vegetation communities range from the woodlands, grasslands and shrublands in the valleys to the subalpine snow gum and *Poa* grassland of the exposed windswept ridges at elevations of up to 1600 m. Almost 500 plant species have been recorded from Tidbinbilla and some, particularly ferns and orchids, are uncommon in the ACT. Tall wet forest has only a limited distribution in the ACT.

Tidbinbilla contains a range of animal species that are typical of the regional landscape and relate to the local diversity of habitat. A feature of Tidbinbilla is its wildlife collection where captive animals can be seen in natural surroundings. Special research programs are associated with some of these animals, in particular, the northern corroboree frog and brush-tailed rock wallaby—last recorded in the wild from Tidbinbilla. Some of the rocky summits of the ranges are gathering sites for migratory Bogong moths. In the past, Aboriginal people travelled to the mountain tops to collect and feast on the moths as part of complex social gatherings between adjacent upland tribes.

The catchment of the Tidbinbilla River is small but water is a key resource at Tidbinbilla and essential to plant and animal life. The artificial wetlands of the Sanctuary depend upon a regular flow in the river. Riverine settings are a focus of recreational activity.

Fire is a major ecosystem process and an important component of the Tidbinbilla environment. In ways not fully understood, it is also closely related to human use of the mountains. In 2003, more than 90 per cent of Tidbinbilla was severely burnt, with extensive destruction of facilities and infrastructure. The recovery and regrowth of native species is testimony to the regenerative capacity of the Australian bush and this recovery will occur through the life of the management plan.

- Cultural heritage** The Tidbinbilla Valley and surrounding ridges has abundant evidence of traditional Aboriginal occupation. Archaeological evidence indicates occupation of the area during the last glacial maximum more than 20 000 years ago when the tablelands would have been an inhospitable, sparsely populated upland landscape. The mountain peaks of Tidbinbilla were recorded by early Europeans as initiation sites for young men.
- European settlement and land use at Tidbinbilla since the early 19th century is linked to nationally significant historical themes and the settlement patterns of the Southern Tablelands and Australian Alps. In addition to pastoralism, the valley had some more intensive farming uses as well as forest uses (timber, eucalyptus oil and later, softwood plantations). In the early 1960s some of the area was divided up for sale as hobby farms. Some of the former residents and their descendants maintain a close association with the area.
- Scenic beauty** The mountains of Tidbinbilla contribute to the scenic backdrop for the National Capital. The massive granite tors are a defining landscape feature. Tidbinbilla is a blend of natural and cultural landscapes. It forms a transition between the cleared pastoral areas of the ACT and the rugged mountain ranges that form its boundary and continue westward through Namadgi. The regenerating woodland and forest of Tidbinbilla following the 2003 fire is a reminder of the power of natural forces.
- Recreation/Tourism** Tidbinbilla is of regional significance as a place of outdoor recreation and is integral to the promotion of nature based tourism in the ACT. Tidbinbilla is highly valued as a place to enjoy a picnic or barbecue with family and friends in a peaceful natural setting where wildlife can be observed. It is also recognised as a place to take international visitors to see native animals such kangaroos, emus, koalas and platypus. At the Sanctuary, a wheelchair and stroller friendly walk links a number of habitat zones, including the wetlands. Here, trained volunteers provide guidance to visitors. Tidbinbilla also offers a limited range of more challenging recreational activities away from the facilities of the valley floor. Bushwalks to the mountain ridges are rewarded by contrasting views of spectacular mountain ranges and vistas of the rural countryside and the landmarks and southern suburbs of Canberra.
- Education** Tidbinbilla has an established reputation for environmental education and interpretation. Birrigai at Tidbinbilla provides a range of teacher-delivered environmental programs which seek to enhance visitor knowledge and understanding of human interaction with the environment, both in the past and into the future. In Tidbinbilla Nature Reserve, education and interpretation have a strong focus in the Wildlife Precinct and material is provided throughout the reserve to guide and inform visitors. The wildlife collection provides an opportunity to observe wildlife in natural surroundings and to learn about threatened species and some of the animals that occur in the ACT region.

Research

Tidbinbilla has been part of a range of research activities related to the wildlife collection, threatened species, the flora and fauna of the area, and Aboriginal and European occupation. It has been a location for the study of kangaroo–pasture dynamics and for pioneering bio-acoustic studies based on lyrebirds. Scientific archaeological research in the 1970s and 1980s documented Aboriginal use of the area and contributed to establishing that Aboriginal people lived in south-eastern Australia during the Pleistocene. A feature of the threatened species program is captive breeding (brush-tailed rock wallaby, eastern bettong and northern corroboree frog) and an important ongoing role for Tidbinbilla is to facilitate research into the conservation biology of threatened species. There is potential for further research in a range of environmental, educational and social disciplines.

3

Management Framework



Planning pays off. Whether it is a small operational task or a major management planning exercise, clarity of purpose and clear direction always wins over ad hoc arrangements.

Protected Area Management: Principles and Practice (Worboys et al. 2005)

The management of Tidbinbilla is underpinned or influenced by a wide range of legislation, agreements, and government planning and policy documents. This is primarily ACT legislation, plans and policies, but Commonwealth legislation, and national and international agreements may also be relevant. Some of this legislative and policy framework is likely to change or be amended during the life of the management plan and will need to be updated by the area manager. The management plan aims to integrate these legislative obligations, policy directions, agreements and guidelines in a holistic manner to ensure the values of Tidbinbilla are duly conserved.

3.1 International Context

International documents, relevant to the management of Tidbinbilla, are the United Nations *Convention on Biological Diversity* ratified by Australia in 1993, the World Conservation Union (IUCN) categories of protected areas, and the *Burra Charter*, which is Australia's version of the *Venice Charter* (1964) that deals with the preservation and restoration of historic monuments.

The *Convention on Biological Diversity* promotes the conservation of biological diversity, sustainable use of its components, and fair and equitable use of genetic resources. In line with this Convention, Australia prepared the *National Strategy for the Conservation of Australia's Biological Diversity* (DEST 1996) to which all state and territory governments are signatories.

Tidbinbilla qualifies as a protected area as defined by the World Conservation Union (IUCN) being 'an area of land especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means' (Dudley 2008). Category II of the IUCN classification is relevant to Tidbinbilla: National Park: protected area managed mainly for ecosystem protection and recreation.

The *Burra Charter* provides guidance for the conservation and management of places of cultural heritage significance in Australia. The current *Burra Charter* is the version adopted in 1999 by the Australian National Committee of ICOMOS (International Council on Monuments and Sites) (Australia ICOMOS 1999). ICOMOS is an international organisation under the auspices of UNESCO.

Tidbinbilla is a member of the Zoo and Aquarium Association, formerly the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA) which has prepared guidelines and policies for the management of a wildlife collection. The Association also sets out content requirements (Australasian Species Management Program) for species management plans <<http://www.arazpa.org.au>>.

3.2 National Context

National agreements and frameworks provide the context for policies developed under ACT legislation that are relevant to the management of Tidbinbilla. *Australia's Biodiversity Conservation Strategy 2010–2030* (Natural Resource Management Ministerial Council 2010) sets out priorities, measurable targets and actions directed to the goal of protecting biological diversity and maintaining ecological processes and systems.

The Australian Alps Co-operative Management Program provides a key management framework for the area. Under the Australian Alps Memorandum of Understanding the program outlines three-yearly strategic plans with priority issues. The special character of the Alps is reinforced by the inclusion of the Australian Alps National Parks and Reserves on the National Heritage List, which comprises exceptional natural and cultural places that contribute to Australia's national identity.

Throughout Australia, protected areas like Tidbinbilla are being increasingly recognised as key components to building ecological connectivity across the wider landscape in the face of climate change (Dunlop and Brown 2008). This contribution to ecosystem resilience is given particular attention in *Australia's Strategy for the National Reserve System 2009–2030* (National Reserve System Task Group 2009).

Under the auspices of the National Reserves System Cooperative Program, Australia has been divided into 85 biogeographical regions. These are large, geographically distinct areas of land with common characteristics such as climate, ecological features and plant and animal communities (DEHWA 2009a). Biogeographically, the ACT falls within the Australian Alps and the South Eastern Highlands bioregions, sharing its environmental characteristics with surrounding NSW and parts of Victoria, a biologically relevant framework for conservation effort. Tidbinbilla lies in the South Eastern Highlands bioregion.

National frameworks are also important in relation to recreation and tourism. The Australian Alps National Parks, of which Tidbinbilla is part, are included in Tourism Australia's National Landscapes Program marketed as part of 'Brand Australia' (Australian Alps National Landscape Inc. 2009; <<http://www.australia.com>>). Visitor experiences and marketing related to this program are included in the *Strategic Plan 2008–2011* under the Australian Alps Co-operative Management Program (Cairnes and Australian Alps Liaison Committee 2008). The ACT is involved in the preparation of nation-wide classification systems for walking tracks and mountain bike trails. These are primarily aimed at informing users rather than being a design standard as in the Australian Standard for walking tracks: AS 2156.1–2001 (Standards Australia Ltd 2001).

National and related ACT frameworks also apply to Birrigai at Tidbinbilla. The facility complies with the ACT Education and Training Directorate's *Outdoor Adventure Activities Policy* (2009), which sets out the policy and mandatory procedures covering on-site activities. Under these procedures, annual equipment inspection by an independent third party occurs, and the school has an equipment renewal and retirement policy to ensure compliance with nationally recognised safety standards. Staff members undertaking activities on site with low and high ropes have the mandatory Certificate IV Outdoor Recreation (SRO40203), as per the Australian Quality Training Framework. Birrigai at Tidbinbilla staff members obtain their competencies through Outward Bound Australia, a registered training organisation. Exhaustive Statements of Procedure are in place for all activities undertaken on-site. Birrigai at Tidbinbilla is a member of the Australian Association for Environmental Education and is actively involved in a range of national environmental education programs, such as Carbon Kids and AuSSI (Sustainable Schools Initiative).

3.3 Legislation

The main legislation governing the management of Tidbinbilla is the *Planning and Development Act 2007*. The object of this Act is to provide a planning and land system that contributes to the orderly and sustainable development of the ACT. The Act establishes the *Territory Plan*; provides for the identification of Public Land and its reservation for defined purposes; defines management objectives for each category of Public Land; outlines requirements for management plans; and provides for environmental impact assessment. Other ACT legislation relevant to the management of Tidbinbilla is shown in Table 3.1.

Table 3.1 ACT legislation relevant to the management of Tidbinbilla

Legislation	Relevance to Tidbinbilla
<i>Nature Conservation Act 1980</i>	Provides for the protection and conservation of native plants and animals, declaration of threatened species and ecological communities, and provides management authority for areas reserved for conservation of the natural environment.
<i>Education Act 2004</i>	Birrigai at Tidbinbilla operates as a 'School in Special Circumstances' as described under section 20(3) of the Act.
<i>Heritage Act 2004</i>	Establishes a system for the recognition, registration and conservation of natural and cultural heritage places and objects. A list of these places is maintained on the ACT Heritage Register.
<i>Emergencies Act 2004</i>	Primary object is to protect and preserve life, property and the environment. The Act requires the preparation of a Strategic Bushfire Management Plan for the ACT. It also establishes the ACT Rural Fire Service as the body responsible for operational planning and fire response in rural areas, which include Tidbinbilla.
<i>Water Resources Act 2007</i>	Provides for the sustainable use and management of ACT water resources; the protection of aquatic ecosystems and aquifers from damage and, where practicable, reversal of past damage. The ACT water resources strategy and environmental flow guidelines for streams are established under the Act (ACT Government 2004a, 2006).
<i>Environment Protection Act 1997</i>	Provides the regulatory framework to help reduce and eliminate the discharge of pollutants into the air, land and water. Environmental protection policies are established under the Act, which also sets water quality standards.
<i>Pest Plants and Animals Act 2005</i>	Main objects are to protect the land and water resources of the ACT from threats from pest plants and animals and to promote a strategic and sustainable approach to pest management.
<i>Domestic Animals Act 2000</i>	Provides for the identification and registration of certain animals including dogs, and sets out the duties of owners, carers and keepers.
<i>Crimes Act 1990</i>	Consolidates statutes related to criminal law.
<i>Firearms Act 1996</i>	Provides for the use of firearms by park personnel.
<i>Prohibited Weapons Act 1996</i>	Prohibits the possession of certain dangerous weapons and other articles.
<i>Fisheries ACT 2000</i>	Objects are to conserve native fish species and habitats and to sustainably manage ACT fisheries.
<i>Litter Act 2004</i>	Provides for the control and regulation of litter including dumping.
<i>Animal Diseases Act 2005</i>	Provides for the control of endemic and exotic diseases of animals.
<i>Animal Welfare Act 1992</i>	Primary purposes are to promote vertebrate animal welfare and control activities that cause suffering to animals. The Act covers scientific research and gazetted codes of practice for management and control of animals: <i>Code of Practice for the Humane Destruction of Kangaroos in the ACT</i> (1994) (DI 1994-149); <i>Australian code of practice for the care and use of animals for scientific purposes</i> (NHMRC 2004) — gazetted under the Animal Welfare Act (DI 2005-188).
<i>Public Health Act</i>	Provides for the protection of the public from public health risks.
<i>Roads and Public Places Act 1937</i>	Provides for temporary roads, temporary closure of roads and use of public places.
<i>Stock Act 2005</i>	Contains regulations for the control of stock and ruminants.
<i>Trespass on Territory Land Act 1932</i>	Provides for the regulation of straying stock, illegal camping, and unauthorised occupation of public or private land.
<i>Hawkers Act 2003</i>	Provides for the regulation of the activities of hawkers in public places

The main Commonwealth legislation pertaining to Tidbinbilla is the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This Act is the primary Commonwealth legislation for environment and heritage protection. Under the EPBC Act, Tidbinbilla Nature Reserve is included in the National Heritage List as part of the Australian Alps National Parks and Reserves.

3.4 ACT Planning Framework

Planning is a process that considers the past and present but looks to the future. It is focused on determining 'what should be' (usually defined by a series of objectives) and selecting suitable approaches to achieve those objectives. Planning can occur at different scales:

- **Land use planning:** determines in a broad sense which areas of land will be used for what purpose (*National Capital Plan, Territory Plan*).
- **Area management planning:** once land use has been determined, area management plans determine how such areas will be managed (Tidbinbilla Plan of Management).
- **Site planning:** deals with the design of a particular area or facility (e.g. design of the Sanctuary at Tidbinbilla). This detailed planning may be done in a 'master plan' and subsequent design documentation for the construction of new facilities as part of specific capital works projects.

All the land in Tidbinbilla is Territory Land as defined in the *Australian Capital Territory (Planning and Land Management) Act 1988* (Cwlth). Its management is the responsibility of the ACT Government; however, it is still subject to the policies of the *National Capital Plan* (NCA 2002) as well as those of the *Territory Plan* (ACTPLA 2009) (for more detail, see Appendix 1).

In the *National Capital Plan*, Tidbinbilla is included in the General Policy Plan for the ACT, in the Mountains and Bushland land use category of the National Capital Open Space System (NCOSS). The latter involves a linked system of 'open space' areas aimed at protecting the natural setting of the National Capital. The plan contains principles and policies for both NCOSS and Mountains and Bushland, as well as permitted uses of Mountains and Bushland.

In the *Territory Plan*, established under the *Planning and Development Act 2007*, Tidbinbilla is included in the Non-Urban Zone: NUZ5 - Mountains and Bushland (*Territory Plan* Vol. 1). Objectives for the zone cover protection of the environment (including water supply), scenic and landscape character, opportunities for education and research, and ensuring any development is unobtrusive. A Non-Urban Zones Development Code contains additional planning, design and environmental controls including restrictions on use.

3.5 ACT Strategies and Plans

A number of ACT strategies and plans are relevant to the management of Tidbinbilla:

ACT Nature Conservation Strategy 1998: Establishes a policy framework for conservation of biodiversity in the ACT. It is prepared under the provisions of the Nature Conservation Act (ACT Government 1998).

Action Plans for threatened species/ecological communities under the Nature Conservation Act 1980: Actions Plans relevant to Tidbinbilla are:

- Action Plan No. 6: Northern corroboree frog *Pseudophryne pengilleyi*. An endangered species (ACT Government 1997).
- Action Plan No. 22: Brush-tailed rock-wallaby *Petrogale penicillata*. An endangered species (ACT Government 1999b).
- Action Plan No. 27: *ACT Lowland Woodland Conservation Strategy*. This strategy focuses on lowland woodland in the approximate altitudinal range 600–1000 m. It includes the threatened Yellow Box - Red Gum Grassy Woodland and threatened species associated with woodland habitat (ACT Government 2004b).

- Action Plan No. 28: *ACT Lowland Native Grassland Conservation Strategy*. This strategy focuses on lowland native grassland, generally occurring at altitudes below 625 m where tree growth is limited by cold air drainage. It includes the threatened Natural Temperate Grassland and threatened species associated with grassland habitat (ACT Government 2005a).
- Action Plan No. 30: Spotted-tailed quoll *Dasyurus maculatus*. A vulnerable species (ACT Government 2005b).

Bush Capital Legacy: iconic city, iconic natural assets. Plan for Managing the Natural Resources of the ACT (2009): The plan, prepared by the ACT Natural Resource Management Council, contains sixteen targets to guide natural resource investment in the ACT. These are based on issues of concern under the categories of community, land, water and biodiversity (ACT NRM Council 2009).

ACT Weeds Strategy 2009–2019: The Strategy aims to reduce the impact of weeds on the environment, the economy, human health and amenity. It recognises that weed management is an integral component of sustainable management of natural resources and the environment (ACT Government 2009).

Strategic Bushfire Management Plan for the ACT. Version Two October 2009. This plan sets out the strategies and specific actions by which the ACT community and the ACT Government can better manage bushfires and reduce the bushfire risk to life, property and the environment (ACT ESA 2009a).

ACT Kangaroo Management Plan (2010): This plan sets out the approach to be adopted in maintaining wild populations of eastern grey kangaroos in the ACT while managing their environmental, economic and social impacts and ensuring their welfare (ACT Government 2010b).

Australian Capital Tourism: Five Year Strategic Plan 2009–13 (2009): This plan provides the basis for the business activities of Australian Capital Tourism for the period 2009–2013. It sets out the goals of the organisation and the approaches to be taken to achieve those goals (Australian Capital Tourism 2009).

Think water, act water (2004): This is the ACT water resource management strategy, which aims to ensure that the ACT has a long-term adequate and secure water supply. The strategy (Vol. 3) contains water flows and volumes for 32 ACT sub-catchments including Paddys River of which Tidbinbilla is part (ACT Government 2004a).

The ACT Climate Change Strategy 2007–2025: This provides an overview of climate change science, the predicted impacts on the ACT, and the ACT Government's vision and direction for responding to climate change. The climate change ***Action Plan 1 2007–2011*** sets out measures to reduce emissions and a range of associated actions (ACT Government 2007a, 2007b).

ACT Pest Animal Management Strategy 2012–2020: This sets out the steps in a strategic approach to developing and implementing a vertebrate pest animal management program (ACT Government 2012).

3.6 Key Desired Outcomes for the Management Plan

Key desired outcomes for the ten-year life of the management plan are:

Natural Values

- The natural values of Tidbinbilla are conserved and interpreted to visitors.
- Rehabilitation efforts in Jedbinbilla and Gibraltar are well progressed towards the re-establishment of a native vegetation cover.
- Species that are threatened, uncommon or have particular habitat requirements (e.g. greater glider, powerful owl) continue to be present.

Cultural Values

- Cultural values are better recognised at Tidbinbilla and are conserved and interpreted to visitors.
- The characteristics and significance of the rock shelters in Jedbinbilla has been determined.
- A more comprehensive approach to the interpretation of Aboriginal and European cultural heritage is established.

Recreation and Tourism

- Tidbinbilla has a high profile as a nature based destination for ACT residents and tourists and introduces visitors to the ACT parks and reserves system.
- Visitor numbers are sustainably managed.
- Tidbinbilla is well recognised for the range of opportunities provided for visitors; encompassing active and passive recreation, education, and interpretation of natural and cultural heritage.
- Options for overnight stays have been considered in association with further tourism opportunities and suitable options pursued.

Education and Interpretation

- Tidbinbilla has a comprehensive, highly regarded, interpretation program.
- While retaining its own identity, the programs, activities and facilities at Birrigai are successfully integrated into the Tidbinbilla precinct.
- Tidbinbilla has a well-recognised role in environmental education, and natural and cultural heritage conservation, which attracts the involvement of people from the ACT region and elsewhere.

Research and Monitoring

- Tidbinbilla has a well-known and respected wildlife collection comprising animals for general captive display and a conservation program for threatened species, involving captive breeding and release back to the wild. Research on threatened species is facilitated and supported through partnerships and sponsorships.

Community

- The community and corporate sector are actively involved in management programs at Tidbinbilla and cooperative arrangements are in place with reserve neighbours.

Site Planning

- A master plan has been prepared that identifies the preferred location for new or modified facilities and infrastructure with implementation well progressed.

4

Community and Corporate Involvement



When communities work together to identify and conserve heritage places, they can reflect on the past and build stronger bonds for the future. Keeping these places enables the community to experience again and again the pleasures they offer. Once lost, they are gone forever.

***Protecting Local Heritage Places: A guide for communities* (Australian Heritage Commission 2000)**

4.1 Primary Management Objectives

- **Community and corporate partnerships are formed that effectively contribute to the management and operation of Tidbinbilla.**
- **Cooperative ‘good neighbour’ relationships are established between Tidbinbilla and adjacent land owners.**

4.2 Community Involvement

Community involvement is an integral component of protected area management in Australia and a feature of recent decades has been the organised participation of the community in reserve planning and a wide range of management tasks. This includes helping to formulate management plans, operation of visitor centres, interpretation, undertaking and assisting with monitoring and research, and on-ground activities such as track maintenance, weed removal and bush regeneration projects. In this plan, community involvement refers to individuals or groups of people taking a particular or active interest in the planning and management of Tidbinbilla. Crucial to community involvement, maintaining the interests of those involved, and encouraging the contribution of others are the communication activities undertaken by the managers of Tidbinbilla.

Community Groups

The Canberra population has developed a close association with Tidbinbilla Nature Reserve and Birrigai at Tidbinbilla. Community groups with interests in the area are mainly those involved in volunteer activities; outdoor recreation (e.g. bushwalking); the Aboriginal and European history of the area and cultural heritage conservation; conservation and land management; and observation and study of natural heritage especially the flora and fauna. Some groups have more than one interest.

As descendants of the many generations of Aboriginal people who occupied the local area for thousands of years, the Aboriginal community feels a great sense of connection to the montane and tableland landscapes of the south-east region of which Tidbinbilla is part. For them, it is their Country. Formally, their interests are represented through the United Ngunnawal Elders Council and the Representative Aboriginal Organisations in the region.

Groups that have a particularly close association with Tidbinbilla are the Friends of Tidbinbilla and the Tidbinbilla Pioneers Association. Established in 1992, Friends of Tidbinbilla is the Park Care group for Tidbinbilla Nature Reserve and is part of the Southern ACT Catchment Group. Friends of Tidbinbilla undertakes a wide range of activities including the regular Waterwatch and Frogwatch monitoring, fauna surveys, weed removal, track maintenance, tree planting, maintenance of cultural heritage places, and the annual Tidbinbilla Extravaganza. The Tidbinbilla Pioneers Association was founded by descendants of the families who lived in the Tidbinbilla Valley prior to the establishment of the reserve. The association is active in documenting and promoting the history of the area and conserving the remnants of European settlement.

Conservation Volunteers is a national, not-for-profit community based organisation that involves the community in practical conservation and environmental management programs. Conservation Volunteers is contracted to provide a Volunteer Interpretive Program which involves placing trained volunteer interpreters at key visitor nodes including the Sanctuary, Visitor Centre and Nature Discovery Playground. There are over 50 active volunteer interpreters in the program.

COMMUNITY INVOLVEMENT**OBJECTIVE**

- **The community actively and effectively participates in the planning and management of Tidbinbilla.**

POLICIES

- Established community groups that contribute to the planning and management of Tidbinbilla will continue to be encouraged and supported.
- Other members of the community will be encouraged to become involved in the planning and management of Tidbinbilla.

ACTIONS

- Provide support to community groups that are actively involved with the management of Tidbinbilla.
- Involve community groups in the collection and recording of data for monitoring programs and reporting of results.
- As operational circumstances permit, provide work experience opportunities for individuals, including students and Aboriginal people.

4.3 Corporate Partnerships

There is the potential for Tidbinbilla to develop constructive partnerships with the corporate sector to obtain additional resources to support specific activities or programs. This could involve cash or in-kind sponsorships, or donations associated with events, wildlife programs, visitor programs or visitor facilities. Programs such as captive breeding, for example, are expensive and resource intensive and corporate funding could help ensure the maintenance of ongoing projects.

Corporate involvement should be guided by a business planning approach, framed within the objectives and policies of this management plan (Worboys et al. 2005).

CORPORATE PARTNERSHIPS**OBJECTIVE**

- **Tidbinbilla develops corporate partnerships and obtains sponsorships and donations that support management programs and activities.**

POLICY

- Corporate partnerships, sponsorships and donations, which are in accordance with the objectives and policies in this management plan, will be encouraged and actively sought to support management programs and activities.

ACTION

- Seek corporate partnerships, sponsorships and donations to support the operation of the wildlife collection, the events and visitor program, and other management activities.

4.4 Concessions and Commercial Activities

A concession is a right granted by way of a lease, licence or permit for occupation or use of a particular area to provide facilities or services (e.g. food vending) or to undertake particular activities (e.g. guided tours). This right is usually subject to the payment of a fee. Commercial recreation and tourism is considered in s. 8.7.

CONCESSIONS AND COMMERCIAL ACTIVITIES

OBJECTIVE

- **Opportunities are provided for concessions and commercial activities at Tidbinbilla that enhance the visitor experience and support the area's functions and management objectives.**

POLICIES

- Concessions (e.g. mobile food, coffee vending) will be encouraged at selected locations.
- Concessions and commercial licences granted at Tidbinbilla will be required to operate in accordance with prevailing ACT Government policies and the objectives and policies in this plan of management.

ACTION

- Investigate and promote opportunities for concessions and commercial activities at Tidbinbilla that enhance the visitor experience and support the area's functions and management objectives.

4.5 Neighbours

Most of the boundary of Tidbinbilla adjoins other Public Land with complementary management. Former pine plantation areas in the Pierces Creek Forest will present ongoing management issues at the reserve boundary for some time including control of pine wildings, uncontrolled off-road vehicle use and environmental damage.

Two rural leases adjoin the boundary of Tidbinbilla, these are Tidbinbilla Station (adjacent to Jedbinbilla) and Gibraltar Station (adjacent to Birrigai). The Corin Forest Mountain Recreation Resort (on Corin Road) adjoins Tidbinbilla on the southern boundary. Most issues arise regarding the interface between rural and reserve land and the different management objectives for these lands. Particular issues in the Tidbinbilla area include fire management, weeds, pest animals, densities of eastern grey kangaroos, and after-hours security. Other ACT Government plans and strategies may be relevant to some of these issues e.g. the ACT Weeds Strategy (ACT Government 2009). It is desirable that complementary management arrangements are made for boundary areas, recognising that on some matters there may not be agreement e.g. densities of eastern grey kangaroos. Interests of rural landholders in the ACT are represented by the ACT Rural Landholders Association.

Some key principles can be articulated for the relationship between Tidbinbilla and its rural neighbours:

- The right of neighbours to the quiet enjoyment of their land and to undertake their activities without undue impacts from the reserve is recognised and respected.
- The responsible management and stewardship of the reserve in accordance with Public Land objectives and the objective and policies of the management plan is recognised and respected.
- Generally accepted standards of good neighbourly behaviour are accepted and will be applied by both parties.

- Open and honest communication is essential and will be undertaken by both parties. Reserve management will communicate government policy, planning processes, management decisions and any other matter relevant to neighbours and invite their participation in decision making on those matters.
- The practical resolution of management matters at a local level is a priority.

(adapted from NSW NPWS 2002; Worboys et al. 2005)

NEIGHBOURS

OBJECTIVE

- **Cooperative arrangements with neighbours result in land management programs that deal effectively with matters of concern.**

POLICY

- Communication mechanisms and liaison arrangements with neighbours will be maintained and further developed, as required, to facilitate cooperative working arrangements on matters of concern (e.g. fire management, pest plant and animal control, access, straying stock).

ACTIONS

- Undertake to meet with neighbours at least twice a year to discuss land management issues.
- Working with the ACT Rural Fire Service, participate in fire planning and operational programs across reserve and leasehold boundaries.

5

Management Zones



Zoning should be applied to all activities occurring within a protected area: conservation, other land uses, and of course recreation and tourism. The zones, with the policies applied to them, should appear in the protected area management plan and thus guide the way in which the area is managed.

Sustainable Tourism in Protected Areas. Guidelines for Planning and Management (Eagles et al. 2002)

5.1 Reserve Zoning

This chapter defines the primary management zones for Tidbinbilla:

- Zone 1: Core Conservation
- Zone 2: Conservation and Rehabilitation
- Zone 3: Developed Recreation and Education.

Broadly this zoning represents a gradation from management giving priority to protecting natural values (Zone 1) to a primary focus on providing for visitors (Zone 3).

Zoning is a system of defining areas within a reserve based on the values that management aims to protect and the types of activities that will be permitted related to the protection of those values. It is a means of expressing management priorities for particular areas related to management objectives. Zoning categories and the boundaries of management zones are determined by the spatial arrangement of key reserve values such as biodiversity, geodiversity, cultural heritage and scenic quality and are influenced by established patterns of use and access.

The main purpose of reserve zoning is to specify the appropriate levels and forms of use and access (particularly for recreation), related to the values, and associated facilities and management requirements (NSW NPWS 2006). Common management and recreation policies are applied to each of the zones. Zoning also assists in reducing the potential for conflict between uses. To be useful, zoning must reflect real and significant differences in management emphasis (Worboys et al. 2005).

A zoning system is defined for Tidbinbilla taking into consideration the following:

- application to Tidbinbilla of the ACT legislative and planning framework
- protection of natural and cultural heritage
- management of the disturbed landscapes of some parts of Tidbinbilla
- existing infrastructure, patterns of use and management arrangements
- land capability, taking into account constraints such as slope, presence of threatened species and/or ecological communities, an asset protection zone for bushfires, and protection of the Tidbinbilla River corridor.

The 1999 management plan for Tidbinbilla Nature Reserve defined two management zones coinciding with the Public Land categories (National Park, Special Purpose Reserve). This management plan defines a third zone (Conservation and Rehabilitation) which covers the former pine plantation areas of Jedbinbilla and Gibraltar, in recognition of their particular management requirements.

The three primary management zones defined for Tidbinbilla are outlined in Table 5.1 and shown in Figure 5.1. While key values are identified for each of the management zones, therefore indicating priorities for management, particular high value attributes (e.g. presence of threatened species or significant cultural heritage places) can occur anywhere in the precinct and require appropriate protection and management whether or not they are identified as a key value for the zone in which they occur. Many objectives and policies are common across all zones.

Table 5.1 Tidbinbilla: primary management zones

Zone	Description	Public Land Category	Values
Zone 1: Core Conservation	Naturally vegetated mountains, rocky hills and slopes that form the boundary of the Tidbinbilla Valley and connect with Namadgi NP and other Public Land.	National Park	<i>Key values:</i> <ul style="list-style-type: none"> • Biodiversity, geodiversity • Landscape, scenic, aesthetic <i>Other and associated values:</i> <ul style="list-style-type: none"> • Cultural heritage (esp. (i) Aboriginal rock shelters and other sites; (ii) Nil Desperandum cottage) • Scientific, educational • Recreation (primarily bushwalking)
Zone 2: Conservation and Rehabilitation	Jedbinbilla Gibraltar	Special Purpose Reserve, National Park	<i>Key values:</i> <ul style="list-style-type: none"> • Cultural heritage (esp. Aboriginal) • Scientific, educational <i>Other and associated values:</i> <ul style="list-style-type: none"> • Recreation (walking, cycling) • Biodiversity, geodiversity
Zone 3: Developed Recreation and Education	Built or developed recreation/ education facilities and recreation nodes including Birrigai at Tidbinbilla, Tidbinbilla Visitor Centre, Ribbon Gum Theatre, Nature Discovery Playground, barbecue and picnic areas, the Sanctuary and other facilities in the Wildlife Precinct. Areas potentially suitable for possible future developments. Includes Asset ProtectionZone ² for bushfire.	Special Purpose Reserve, National Park ¹	<i>Key values:</i> <ul style="list-style-type: none"> • Recreation (playground, barbecue and picnic facilities, short walks, captive wildlife) • Education (Birrigai at Tidbinbilla, Visitor Centre, Sanctuary, Ribbon Gum Theatre, captive wildlife) • Scientific (including captive breeding programs) • Cultural heritage (Aboriginal and European) <i>Other and associated values:</i> <ul style="list-style-type: none"> • Landscape, scenic, aesthetic • Biodiversity

Notes: 1 In vicinity of Visitor Information Centre only.

2 Outer Asset Protection Zone as defined in the *Strategic Bushfire Management Plan for the ACT* (ACT ESA 2009).

5.2 Management Policies for Defined Management Zones

Management policies for the primary management zones at Tidbinbilla (Table 5.1) are outlined in Table 5.2. As well as broader management objectives and established patterns of use at Tidbinbilla these policies take into account:

- the suitability or unsuitability of areas for particular activities or facilities in relation to reserve values, terrain, and other government policies
- the avoidance of conflict between users with different interests
- the need for specific protection measures for natural and cultural heritage (e.g. for habitat of threatened species and for cultural heritage sites)
- the practicalities of managing different areas including difficulty of access (for both routine and emergency purposes)
- the need to undertake landscape rehabilitation (Zone 2: Conservation and Rehabilitation)
- the high cost of installing and maintaining facilities in some areas.

Figure 5.1 Tidbinbilla: Primary Management Zones

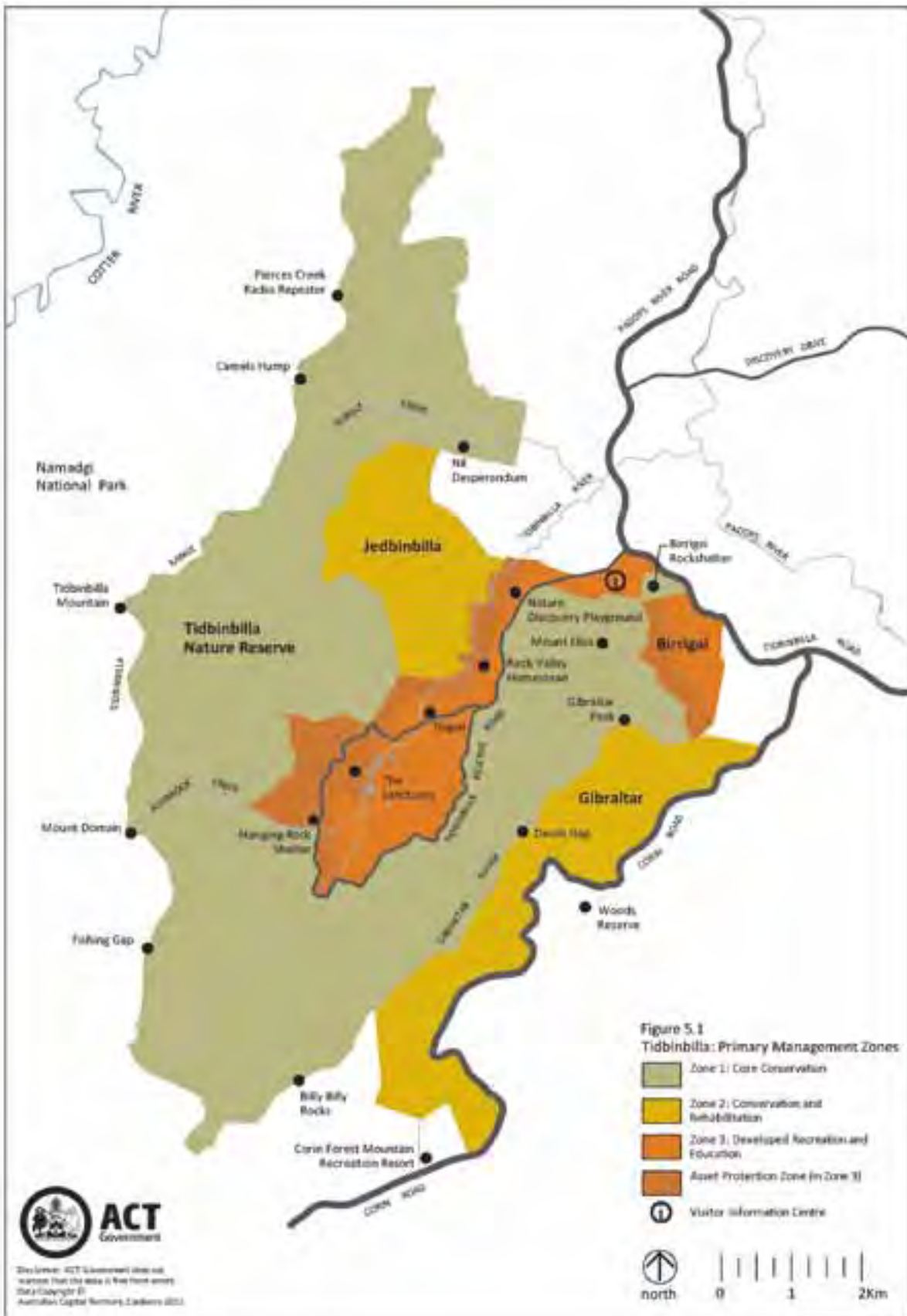


Table 5.2 Management policies for defined management zones at Tidbinbilla related to visitor use, access and infrastructure

Policy Item	Zone 1: Core Conservation	Zone 2: Conservation and Rehabilitation	Zone 3: Developed Recreation and Education
Visitor experience	Suitably prepared visitors can enjoy challenging recreational experiences in natural or natural-appearing settings, with scenic and spectacular views from higher elevations. Recommended walks are on vehicle management trails or walking tracks. Encounters with other visitors generally low.	Limited, in the short to medium term, reflecting the transitional nature of the landscape. A circuit walking and cycling route, incorporating Nil Desperandum is proposed. Access to, and interpretation of, Aboriginal cultural heritage sites is to be investigated. These areas could potentially become an important contributor to visitor experience at Tidbinbilla. Encounters with other visitors low to moderate for term of this plan.	Safe, easily accessible experiences with a recreational/educational focus based around facilities designed and sited to cater for relatively large numbers of people. Zone provides the opportunity for all visitors to gain first hand experience of a range of reserve values. Visitors are likely to encounter relatively large numbers of people at some locations, especially on weekends and public holidays.
Access	Motorised access on management trails for management vehicles and for specific authorised purposes (e.g. research, volunteer work, open days, licensed tour operation). Public access by foot or bicycle (management vehicle trails only).	Motorised access on management trails for management vehicles and for specific authorised purposes (e.g. research, volunteer work, open days, licensed tour operation, hire of Nil Desperandum). Other public access by foot or bicycle (management vehicle trails only).	Developed educational and recreational facilities are linked by vehicle access on public roads. Cycling and walking opportunities may be further developed.
Management (vehicle) trails	No new management trails proposed. Management trails may be redesigned and constructed to improved standards.	Vehicle trails in Jedbinbilla and Gibraltar to be rationalised. Some will be closed and rehabilitated over time, but may remain open in short to medium term for rehabilitation works such as pine wilding removal. Management trails may be relocated, redesigned or constructed to improved standards.	Limited management vehicle trails connecting to Zones 1 and 2.
Walking tracks	Walking tracks to peaks and along ridges including new tracks, maintenance, and upgrade of tracks.	Walking tracks to be investigated and developed. May comprise use of vehicle trails as well as specific walking tracks.	High standard short walks, to cater for wide range of abilities. Walks in Zones 1 and 2 may commence in this zone.

Policy Item	Zone 1: Core Conservation	Zone 2: Conservation and Rehabilitation	Zone 3: Developed Recreation and Education
Public facilities	Limited or no facilities.	Limited or no facilities.	Picnic and barbecue facilities, seating, tables, toilets, shelter, visitor information (including Visitor Information Centre).
Facilities and access for people with disabilities/stroller access	Not applicable due to terrain.	Not applicable due to terrain.	Generally suitable. Sanctuary Loop and Koala Path designed to be wheelchair and stroller friendly.
Management structures	Generally no, unless essential for management purposes.	Limited, some may be necessary for management purposes.	A range of structures are present including the works depot and prominent fencing of wildlife enclosures.
Utility structures (e.g. for Communications)	For essential services only and subject to environmental assessment.	For essential services only and subject to environmental assessment.	A range of structures are present. Attention will be given to location and screening.
Signs	Minimal, for walker safety. May include direction, timing, safety and interpretation signs.	May include direction, timing, safety and interpretation signs.	More detailed and higher standard direction, timing, safety and interpretation signs.
Interpretation	No or limited on-track information. May be provided at track head and/or at Visitor Information Centre.	Interpretive material may be provided at track head, on-track, and/or at Visitor Information Centre. Staff, volunteers, tour operators may provide interpretation.	Higher standard/level of material at track head, on-track, and/or at Visitor Information Centre. Staff, volunteers, tour operators provide interpretation.
Management intervention	Minimal, only as required to protect natural and cultural heritage, construct and maintain walking tracks and fire trails, and for fire management.	High level for areas under rehabilitation. As required to protect natural and cultural heritage, construct and maintain vehicle trails and walking tracks, and for fire management.	Highly managed to cater for relatively large numbers of people.
Pack Camping	Overnight bush camping not permitted. Day walks only.	Overnight bush camping not permitted. Day walks only.	Not applicable.
Campground	Limited camping permitted in association with the hire of Nil Desperandum. Subject to permit.	Not permitted.	Permitted in accordance with the objectives and policies of this plan and development of a more comprehensive accommodation policy. Subject to permit.
Built accommodation	Not permitted except for hire of Nil Desperandum.	Not permitted.	Birrigai at Tidbinbilla and Tidbinbilla Valley floor in accordance with the objectives and policies of this plan and development of a more comprehensive accommodation policy.

Policy Item	Zone 1: Core Conservation	Zone 2: Conservation and Rehabilitation	Zone 3: Developed Recreation and Education
Memorial plaques	Only in accordance with the ACT Government Memorials Policy.	Only in accordance with the ACT Government Memorials Policy.	Only in accordance with the ACT Government Memorials Policy. This zone is the most appropriate for any approved memorials, including the Visitor Information Centre.
Aboriginal cultural camps	Subject to negotiation and only after protocols have been established. Permitted activities to accord with objectives and policies of this management plan.	Subject to negotiation and only after protocols have been established. Permitted activities to accord with objectives and policies of this management plan.	Subject to negotiation and only after protocols have been established. Permitted activities to accord with objectives and policies of this management plan.
Social interaction	Generally low/very low level of interaction with other users. However, numbers not restricted.	Low/moderate level of interaction with other users. This will depend upon the walking opportunities developed.	Moderate/high level of interaction with other users. Varies with location.



This brings us to what I regard as the outstanding scientific attribute of the Australian Alps: the extent and scale of continuous and interrelated environmental diversity as expressed in their ecosystems.

(Alec Costin 1989)

6.1 Primary Management Objectives

- **The biodiversity and geodiversity of Tidbinbilla is conserved.**
- **Ecosystems are managed so that they can continue to function and evolve naturally and the integrity of landscapes and scenery is protected.**

(See **Glossary** for definitions of terms.)

6.2 Background

This chapter is focused on the identification, protection and management of the natural heritage of Tidbinbilla. Though discussed separately, natural and cultural values often form overlapping or layered values (see Chapter 2). Traditional ecological knowledge is part of Aboriginal cultural heritage (s. 7.7, s. 7.8) and Aboriginal people express an interest in managing the natural environment related to this heritage. A management requirement and skill in particular areas is to identify these differing values and to provide for their conservation in relation to their significance. Basing management on sound environmental knowledge is the key to the sustainable management of Tidbinbilla's landscapes, biodiversity and geodiversity.

There is still much to be learnt about the ecological communities in the Tidbinbilla area, the biology and ecology of individual species, and how species and ecosystems respond to environmental change and recover from disturbance. A precautionary and adaptive approach to management is required, recognising the interdependent nature of the elements in the landscape. A key indicator of the success of management in protecting natural values is the persistence of species and ecological communities that are disturbance sensitive, and have specialised habitat requirements and/or limiting biological characteristics such as low fecundity (see **Glossary**).

In this chapter, natural values are considered under the headings of climate and climate change, landscape, geodiversity, hydrology, vegetation, fauna, pest species, fire, and ecological rehabilitation.

6.3 Climate and Climate Change

An understanding of microclimates and weather conditions is important for the management of Tidbinbilla, including the protection of the area's biodiversity, planning and design of facilities, and for visitor safety. An official weather station is operated near the Visitor Information Centre with data entered into the Bureau of Meteorology computer daily. Data for the period 1966 to 2011 show an average annual rainfall of 927 mm, which is about 300 mm higher than for Canberra. The more extreme features of the local climate are of particular importance to management, namely:

- occasional heavy rainfall resulting in flooding in the Tidbinbilla River valley
- summer heat wave conditions with hot, dry north-westerly winds that quickly cure forest and grassland fuels resulting in high to extreme bushfire danger
- occasional very windy conditions that pose a risk to visitors, especially in forested areas
- low winter temperatures, strong winds on the exposed ranges, and occasional snow falls that are hazardous to ill-prepared recreational and other users.

The effects of climate change are of great concern with regard to the protection of natural values in the national reserve system (National Reserve System Task Group 2009). There is a particular threat to parks in the Australian Alps network as global warming is likely to have a significant impact in higher altitude alpine and subalpine areas. Climate change will have a wide range of impacts on species and ecosystems but those of most concern for Tidbinbilla are:

- changes in abundance and distribution of many species, including the arrival and spread of new (native and exotic) species
- altered fire regimes
- altered hydrological systems.

While these changes can to some extent be anticipated, more difficult for managers are the ecosystem interactions that follow changes, especially major events such as high intensity fires that remove keystone or architectural species e.g. canopy trees (Dunlop and Brown 2008). The uncertainties regarding the local effects of climate change make the development of precise management responses difficult. The necessary focus is to manage the change to minimise the loss and appropriate responses include:

- incorporating available knowledge about climate change in the assessment of the potential effects of management actions; monitoring of high risk species and ecological communities; and encouraging research into the effects of climate change on the biota of the park
- minimising threats other than climate change that place stress on species and ecological communities
- evaluating ways in which the effects on high risk species and ecological communities may be minimised
- informing visitors of the potential implications of climate change for park values, especially where visitor use may be impacting on those values
- maintaining, improving and contributing to habitat connectivity both in the reserve and in the regional landscape.

CLIMATE AND CLIMATE CHANGE

OBJECTIVE

- **The implications of climate change for the natural values of Tidbinbilla are integrated into all aspects of management and the detrimental impacts on reserve values are minimised.**

POLICIES

- Knowledge and understanding of potential climate change impacts across the Australian Alps national parks and the ACT region will be incorporated into the management of Tidbinbilla and included in education programs.
- The protection of species and ecological communities considered to be most at risk from climate change will receive high management priority.

ACTIONS

- Incorporate actions contained in the ACT Government's Climate Change Action Plan (ACT Government 2007b) into the management of Tidbinbilla.
- Identify those species and ecological communities most at threat from climate change, establish monitoring programs aimed at tracking and understanding likely changes, and develop management responses that will assist in maintaining those species/ecological communities and allow them to function and evolve.
- Encourage and support research into the implications of climate change for the biota of the region.
- Participate in initiatives to develop and improve ecological connectivity in the Australian Alps and ACT region.
- Continue to operate the weather station at Tidbinbilla to provide local, long-term climatic data.

6.4 Landscape

The landscape of Tidbinbilla is varied and spectacular, ranging from the dominant peaks of Mount Tidbinbilla and Mount Domain through sub-alpine woodland and wet forest to sheltered streams and open grasslands. Exposed granite tors are a particular feature. It is a landscape that blends the natural and the cultural: the pastoral landscapes of the Southern Tablelands and the wild rugged ranges of Namadgi National Park to the south and west. Reminders of Aboriginal and early European occupation add detail and interest at a more intimate scale. More recent developments at Tidbinbilla, such as management infrastructure and visitor support facilities, have been designed to be compatible with their natural settings. The Tidbinbilla Range forms part of the landscape backdrop to Canberra, and Tidbinbilla more generally is included in the National Capital Open Space System in the Mountains and Bushland land use category (National Capital Authority 2002; ACTPLA 2008) (Appendix 1).

The landscape of Tidbinbilla changed dramatically as a consequence of the 2003 bushfire and the process of vegetation recovery is a long-term and continuing process. Whilst certain elements of the pre-2003 landscape have been lost, primary landscape values remain. Removal of the previously intrusive pine plantations of Jedbinbilla and Gibraltar will see the areas revert to native bushland. Loss of valued historical plantings associated with early European occupation is permanent. New developments have added an additional or augmented dimension to the immediate landscape experience.

Management Considerations and Issues

Protection of the landscape of Tidbinbilla is important in a national capital context, as a recreational and educational resource, and for providing a landscape setting for particular cultural heritage sites. Protection of the vegetation and landform components of the landscape is fundamental, as they underpin the area's ecological characteristics and processes. Valley floor areas and adjacent foothills are a cultural landscape deriving from more than a century of rural land use.

The management issues related to landscape conservation tend to be scale-dependent. At a broad scale, skylines, ridge tops and the general vista need to be protected from imposed discontinuities and intrusions, such as telecommunication towers, and from breaks in vegetation, such as service easements. At a more immediate scale, visitor perceptions are important in terms of elements such as the form and design of buildings, infrastructure, park furniture and signs and their setting within the landscape. As a general principle, a high quality and consistent approach to integrating function within a natural setting should be observed as in the Sanctuary.

The grasslands of the valley floor areas and adjacent foothills are secondary grasslands derived from clearing of the previous tree cover in the pastoral and farming period (Ingwersen 1985b). A particular issue in the Tidbinbilla Valley is the invasion of these open grasslands by the native shrub, burgan (*Kunzea ericoides*). This began to establish in the Tidbinbilla Valley from the 1970s and has become a dominant element in the secondary grasslands. Burgan resprouts rapidly after fire, releases very light wind-borne seed that establish in bare areas, and has remarkable site tenacity. While burgan is a colonising species, it 'locks' the vegetation into a stable phase (possibly 70 years or more) that will not proceed to eucalypt woodland (Doherty 1998; Ingwersen n.d.). Allen et al. (1992) suggest that any return to tree cover could take centuries. Burgan is not palatable to native herbivores and overgrazing of grass and forb understorey facilitates its spread.

Landscape and habitat values at Tidbinbilla are changing as valley and foot-slope areas move towards a long-term burgan shrub cover, with some areas of Acacia and other shrub species. Whilst open grasslands are largely a legacy of early farming enterprises, they serve a number of useful purposes in terms of public access, scenic quality, wildlife observation and evidence of past land-uses (cultural landscapes). They may also contribute to fire risk reduction and management access requirements.

LANDSCAPE

OBJECTIVE

- **The scenic quality of the Tidbinbilla landscape is maintained and, where feasible and desirable, enhanced.**

POLICIES

- Management activities, works and structures that have potential to interrupt or modify significant landscape elements such as skylines, ridgelines and major view-fields will be assessed for visual impact and adverse impacts mitigated. Modification, relocation, screening and removal are options to be considered in mitigating or avoiding impact.
- The landscape elements of significant cultural heritage sites will be managed to maintain the values to which they contribute; however, invasive plant species will be controlled.
- The design and siting of buildings, infrastructure and park furniture will pay particular attention to maximising compatibility with the natural settings of the area.
- Vistas will be maintained at strategic locations to enable appreciation of the landscape values of the surrounding hills.

ACTION

- Identify those areas of open grassland in the valley floors and foot-slopes that are important to achieving management objectives for scenic quality, biodiversity conservation, nature interpretation and cultural heritage conservation. Incorporate this analysis into a master plan for the more intensively used parts of Tidbinbilla.

6.5 Geodiversity

Geodiversity (see **Glossary**) may have intrinsic, ecological or heritage values that warrant conservation. Many geological features have formed under climatic or geological conditions that are now inactive. They are essentially relict or fossil features that, once disturbed, will never recover or could be damaged or removed forever. Biodiversity is reliant on geodiversity, and ecosystems depend on the bedrock, landforms and soils, to function properly.

The geology of Tidbinbilla essentially comprises: (a) sedimentary rocks (Adaminaby Beds) formed from deep ocean sediments during the Ordovician period (460 Ma), which occur in the Tidbinbilla Range; and (b) granites (Murrumbidgee Batholith) that intruded into these sediments in the late Silurian (417 Ma). Heat and pressure metamorphosed some of the sedimentary rocks in the contact zone (Finlayson 2008). The Tidbinbilla landscape is defined by both the ancient sediments and the intrusive, now exposed, granites.

The soils of Tidbinbilla generally reflect their underlying bedrock. They tend to be stony or gravelly and are prone to erosion if not stabilised by a good vegetative cover. In some areas, the subsoils may be dispersive and should not be exposed to weathering. Generally, the soils are nutritionally poor except in small areas where alluvial material has been deposited and organic matter accumulated (Hird 1989). Mapping of soil erosion potential and implications for fire management in the ACT, indicates that for Tidbinbilla the highest erosion potential is in parts of the Gibraltar Range, Jedbinbilla and Birrigai; nil to moderate potential in the Tidbinbilla Valley and parts of Birrigai; and nil for the eastern slopes of the Tidbinbilla Range (URS Australia 2009).

Management Considerations and Issues

The exposed granite outcrops and tors and the rugged sedimentary rock formations at Tidbinbilla demonstrate past geological processes, are significant in defining the Tidbinbilla landscape, and in some areas contain evidence of past Aboriginal occupation. Public safety, protection of cultural heritage values, control of activities that may deface or disfigure rock surfaces, and prevention of unnecessary intrusive visual impacts are ongoing management considerations. Consideration of soil stability and erosion potential is important in carrying out works and in determining priorities for rehabilitation activities.

GEODIVERSITY**OBJECTIVES**

- **The rocks, landforms and geological processes of Tidbinbilla are protected from unnecessary disturbance.**
- **Geodiversity and the associated biodiversity, cultural, scenic and educational values of the area are identified, conserved and interpreted.**

POLICY

- The potential for activities (e.g. recreation, fire management), works and developments (including rehabilitation works) to impact upon geodiversity values will be assessed and controlled as part of planning, approval and reserve management processes.

ACTIONS

- Identify and map significant geological and geomorphological features at Tidbinbilla as a basis for protection from disturbance.
- Manage culturally significant geological features to protect their integrity.
- Interpret geodiversity features and processes as a key element in the values of Tidbinbilla.
- Protect the natural integrity of places with significant geodiversity values by appropriate management actions (e.g. avoidance of impacts from works and management of recreational use).

6.6 Hydrology and Water Management

The natural water resources of Tidbinbilla comprise surface water flows, which are concentrated in the streamlines of the Tidbinbilla River and its tributaries, and the groundwater aquifer. Streamflows are highly variable and may be intermittent. As noted earlier, rainfall is higher than for Canberra due to orographic effects. Groundwater supplies are critical to the operation of Tidbinbilla.

The *Water Resources Act 2007* (ACT) regulates activities affecting water bodies in the ACT through the ACT Environmental Flow Guidelines (ACT Government 2006). These are flows necessary to maintain aquatic ecosystems. The water resources of Tidbinbilla are categorised as a 'natural ecosystem' (ecosystems that have persisted in a relatively natural state from a period prior to European settlement). The primary water management goal for these ecosystems in terms of environmental flows is the conservation of their natural state and the maintenance of healthy aquatic ecosystems. There are secondary goals for 'recreation and other purposes'. An environmental flow regime is determined and regulated by setting an abstraction limit.

The Tidbinbilla River at Paddys River Road is one of the three reference sites for the AUSRIVAS biological assessment program in the ACT (site 15) (see **Glossary**: AUSRIVAS). Sampling under the AUSRIVAS macroinvertebrate rapid bioassessment protocol in spring and autumn in the period 2006–2008 indicated that the Tidbinbilla River at site 15 was in a very healthy condition (ACT Government 2007c, 2008). Friends of Tidbinbilla have monitored water quality in the Tidbinbilla River for many years as part of the ACT Waterwatch program.

Management Considerations and Issues

Water is a key resource at Tidbinbilla for several reasons:

- it is critical to ecological and biophysical cycles and processes
- the Sanctuary depends on a regular water flow in the Tidbinbilla River
- both Tidbinbilla Nature Reserve and Birrigai at Tidbinbilla depend upon groundwater for the bulk of their water requirements
- the Tidbinbilla River is part of the Upper Murrumbidgee River Catchment.

There are a number of important considerations and issues for water management at Tidbinbilla:

- Water for all uses and facilities at Tidbinbilla is drawn from local supplies (mainly groundwater), therefore careful use and water conservation strategies are an essential part of management.
- Engineering works associated with development of management infrastructure and visitor facilities have potential for negative impact on natural water bodies. A special effort to protect natural attributes and processes is necessary.
- The weir on the Tidbinbilla River that impounds water for diversion to the Sanctuary wetlands is an imposed barrier. Although a bottom outlet provides for stream flows to be maintained, the downstream movement of sediment and the upstream movement of biota are significantly hindered.
- Once water enters the Sanctuary wetlands, it is retained, treated and recirculated. This closed system is a relatively new development and its effective operation is important for protection of water quality in the river. There is an undetermined potential risk for a flood event to swamp the wetlands and cause contaminated water to enter the Tidbinbilla River directly. Development of facilities in riverine areas should factor potential flooding into location and design.
- Developed visitor recreational sites are concentrated in the valley floor, often taking advantage of riverine settings. Similarly, walking tracks may exploit the attractions of streams and wet gullies. The potential for deleterious recreational impacts on aquatic and riverine attributes warrants special attention. If future use of Tidbinbilla includes an expanded recreational focus, this issue could become more important, as the area has been assessed as having high erosion potential (URS 2009).
- The waters of Tidbinbilla River are used by downstream landholders and contribute to the recreational and water supply assets of the Territory. In this context the conservation of aquatic ecosystems, and maintenance of water quality and flows are important management responsibilities at Tidbinbilla.
- If water management at Tidbinbilla is to be in accordance with accepted guidelines and standards, a systematic monitoring program is fundamental to assessing environmental conditions and management practices.

HYDROLOGY AND WATER MANAGEMENT

OBJECTIVES

- **The aquatic and riparian condition of all watercourses and waterbodies is maintained or improved.**
- **Water abstraction, storage, treatment and discharge are within sustainable limits, take account of ecological needs and seasonal variations, and comply with statutory requirements.**

POLICIES

- An integrated approach to the management of water resources at Tidbinbilla will be undertaken based on:
 - a comprehensive assessment of surface water and groundwater availability and sustainable abstraction levels
 - monitoring of flows, water quality and biotic health
 - management of works, developments and recreation activities to minimise impacts on water resources
 - application of water conservation measures in reserve management and the provision of additional water storage infrastructure and facilities.

ACTIONS

- Develop a program for monitoring the water resources of Tidbinbilla that incorporates water flows, water storage, water quality, biotic health and sustainable groundwater abstraction. Align this program with the Waterwatch program at Tidbinbilla.
- Assess the risks and consequences of a flood event adversely affecting the Sanctuary wetlands, the Tidbinbilla River and riparian areas. Develop a contingency plan to manage issues arising from such an assessment.
- In all works, developments and the provision of infrastructure and facilities, include measures to avoid or minimise impacts on water resources.
- Apply water conservation measures in all aspects of reserve management including the provision of infrastructure and facilities.
- Provide information and explanation to visitors on water conservation measures.

6.7 Native Vegetation

The natural vegetation of Tidbinbilla reflects its varied geology, altitude, aspect, slope and rainfall, and its geographical location within the South Eastern Highlands bioregion bordering on the Australian Alps. Vegetation ranges from sub-alpine snow gum woodland at higher altitudes, through tall montane forest, drier forest and woodland with eucalypts such as peppermints and stringybarks, wet fern gullies, to the grassy valley floor, creek lines with riparian vegetation, and areas being colonised by burgan (*Kunzea ericoides*) (Appendix 3).

In relation to previous disturbance, the vegetation of Tidbinbilla comprises three broad categories:

- the relatively intact forest and woodland cover at medium and higher elevations including ecologically important areas of wet sclerophyll forest
- the highly disturbed valley floors and footslopes with a secondary vegetation cover of grassland, shrubland and tree regeneration following clearing, thinning and coppicing (see **Glossary**) of the former tree cover following European settlement
- the former pine plantations of Jedbinbilla and Gibraltar (now in varying stages of natural regeneration involving mainly native tree species, some pine wildings, and weeds).

The vegetation of Tidbinbilla Nature Reserve has been comprehensively surveyed, with over 475 species of vascular plants recorded (Ward & Ingwersen 1988). Many of these, particularly ferns and orchids, are uncommon or naturally rare in the ACT and are listed as protected plants under the *Nature Conservation Act 1980*.

Farming, timber-getting, eucalyptus oil distilling, pine planting and the 2003 bushfire have left a legacy of modified vegetation which is in varying states of regeneration. There is, therefore, a cultural element to the vegetation of Tidbinbilla. In the valley areas where tree cover was removed, the open areas form part of the developed infrastructure where land is kept cleared or landscaped for specific purposes. Some of these areas contain secondary native grassland, which has developed following tree clearing (see ACT Government 2004b; Ingwersen 1985b). Some exotic vegetation is of cultural heritage significance. In the long term, natural systems can be expected to gradually return to their pre-fire state if left to recover naturally and in the absence of further major disturbances. However, in some areas it is likely that specific management intervention will be necessary to control threatening processes such as weed invasion and soil erosion. In particular, the former pine plantation areas of Jedbinbilla and Gibraltar require special attention to determine and achieve a preferred vegetation outcome.

Significant Vegetation

From a nature conservation perspective, vegetation may have particular management significance because of its representativeness, conservation status (see **Glossary**), ecological role, vulnerability to certain environmental variables, or its cultural heritage or educational value.

The following are examples of significant vegetation at Tidbinbilla:

- **Tall wet forests – Brown barrel (*Eucalyptus fastigata*) montane forest and alpine ash (*Eucalyptus delegatensis*) montane tall forest.** These species are near the limits of their geographical range at Tidbinbilla. Tall wet forests are significant vegetation communities providing important but restricted habitat for larger faunal species such as the greater glider and the powerful owl. These forests have a deep litter layer which provides important habitat for small mammals. They also serve as fire refuges, but will carry a fire in suitable conditions such as in 2003. Alpine ash is dependent on fire for regeneration (by seed germination) but is vulnerable if too frequent fires (a fire-free interval less than 30 years) prevent seedlings from reaching maturity.
- **Ribbon gum (*Eucalyptus viminalis*) tableland riparian woodland.** This is associated with river flats and also occurs as thin strips along creeks in some of the montane forested valleys at Tidbinbilla. It is estimated that less than 30% of the pre-European distribution of this community remains in the ACT (Sharp et al. 2007).
- **Narrow-leaved peppermint – ribbon gum (*Eucalyptus robertsonii* – *E. viminalis*) montane forest.** There is only a small population of the montane forest community in the ACT and most was severely affected by fire in 2003. This ecological community occurs in some riparian parts of Jedbinbilla and its satisfactory recovery is a matter of conservation concern.
- **Yellow box – Blakely’s red gum (*Eucalyptus melliodora* – *Eucalyptus blakelyi*) tableland grassy woodland.** This endangered ecological community occurs in the eastern part of Birrigai in a partially modified form (ACT Government 2004b).
- ***Themeda* grasslands** in the Gibraltar Peak saddle on the eastern slopes of the Tidbinbilla Valley provide habitat for Key’s matchstick grasshopper (*Keyacris scurra*). This species is of scientific interest and is now uncommon in the region.
- **Austral toadflax (*Thesium australis*)** is a once widespread, but naturally rare, perennial herb often associated with kangaroo grass (*Themeda triandra*). Remaining populations in eastern Australia are declining. The small and localised populations at Tidbinbilla are vulnerable to heavy grazing, the development of dense tree or shrub cover and other disturbance (ACT Government 2004b).
- The **grass tree (*Xanthorrhoea glauca*)**, which occurs at Mt Eliza and near the Gibraltar management trail, is locally uncommon.
- **Riparian vegetation** associated with the Tidbinbilla River and its feeder streams provides habitats not found elsewhere in Tidbinbilla and is important to maintenance of water quality and aquatic fauna.
- The **king fern (*Todea Barbara*)** is at the limits of its range in the region and is naturally rare. Tidbinbilla contains two of the three sites where the species has been recorded in the ACT.
- A number of plant species are associated with the scenic attractions of Tidbinbilla by virtue of their appearance and location. They include exposed stands of the grass tree (*Xanthorrhoea australis*), tall forest trees such as ribbon gum (*Eucalyptus viminalis*), alpine ash (*E. delegatensis*) and brown barrel (*E. fastigata*), and the range of tree ferns, ferns, mosses and lichens that are found in the wet gullies of the east-facing slopes.

Management Considerations and Issues

The following considerations and issues are relevant to vegetation management:

- **Knowledge:** Fundamental to sound vegetation management is the requirement to know the type and extent of vegetation present, its condition and what changes are occurring over time. Detailed vegetation survey has been undertaken in Tidbinbilla Nature Reserve (Ingwersen 1985a, 1985b; Ward and Ingwersen 1988). Monitoring received a significant boost following the 2003 fires. It is desirable that this be continued for significant species and vegetation communities and areas being rehabilitated.

Understanding of traditional Aboriginal knowledge of the vegetation, including plant uses and significance, should be sought, as a guide to management and educational and interpretive activities.

- **Protection of natural vegetation communities, especially threatened and uncommon species and ecological communities:** A management priority is to protect these communities and species from unnecessary disturbance. Management interventions may be required to protect natural integrity (see **Glossary**), such as control of invasive weeds and feral animals, application of ecologically based fire regimes, and actions to minimise effects of climate change.
- **Fire regimes:** Fire has a major influence on the vegetation of Tidbinbilla. Of critical importance is the fire regime (s. 6.10) and changes to that regime over time. The integration of ecological and risk management considerations (the latter related to the built infrastructure at Tidbinbilla) is a key aspect of fire management planning for the area (see s. 6.10, s. 11.1).
- **Rehabilitation of disturbed areas:** This is a major management consideration for Jedbinbilla and Gibraltar. Broadly, the approach is to assist natural regeneration with a particular focus on controlling pine wildings, weed invasion and soil erosion, and limiting recreation activities in the short to medium term.
- **Vegetation management for multiple purposes in highly used areas:** This is particularly relevant to the valley areas of Tidbinbilla. Some involves work that is essentially horticultural in nature. Risk management is important in terms of the fire threat to built assets, and hazards to visitors from falling limbs or trees.
- **Habitat protection:** Vegetation is fundamental to habitat, and management actions can have a major influence on that habitat. For example, the ground litter layer, important for small mammals, reptiles and some bird species, is affected by the extent, frequency and intensity of hazard reduction burning.
- **Vegetation succession:** Colonisation of the cleared valley floors by burgan (*Kunzea ericoides*) and smaller areas of other shrub species has become a significant management issue (see s. 6.4 and s. 6.9).

NATIVE VEGETATION

OBJECTIVE

- **Native plant species and communities are maintained and/or rehabilitated and include a representative range of successional stages and age classes.**

POLICIES

- Vegetation that is regionally significant in terms of conservation status, sensitivity to environmental change, ecological role (e.g. habitat), or representativeness will be given conservation priority.
- Information about the vegetation of Tidbinbilla will be collected in a systematic manner that is consistent with agreed standards. It will contribute to regional natural resource databases and inform management programs.
- Management and visitor activities and environmental processes that have potential to fragment or degrade the quality of native vegetation will be assessed and managed as necessary to remove or mitigate the risks involved.

ACTIONS

- Conduct systematic monitoring of significant species and vegetation communities.
- Continue the rehabilitation of disturbed areas mainly through assisted natural regeneration and environmental protection measures.
- Avoid disturbance to significant and/or sensitive vegetation communities and species by visitor and management activities.
- Prepare management guidelines, as required, for vegetation communities and component species, in particular for those that are threatened, uncommon, or otherwise significant.
- Manage vegetation, especially in higher use areas of Tidbinbilla, with the aim of ensuring visitor safety.
- Identify and document traditional Aboriginal knowledge of the vegetation in Tidbinbilla and, where appropriate, apply this to management and educational and interpretive activities.
- Evaluate the use of native plants that have particular cultural significance to Aboriginal people, in revegetation projects and amenity plantings at Tidbinbilla.

6.8 Native Animals

Native animals at Tidbinbilla can be categorised as wild or captive. This section is primarily focused on wild, free-ranging animals. Protection of the fauna was an important rationale for the establishment of Tidbinbilla Nature Reserve and remains a central aspect of the biodiversity conservation role of the area. The animals at Tidbinbilla, both wild and captive, are integral to the visitor experience.

Tidbinbilla has a diversity of habitats supporting over 160 bird species, 30 reptile, 34 mammal and one native fish species (Appendix 4) (ACT Government 1999a; Rutzou et al. 1994). Emus, originally common on the grasslands in the Canberra region but reduced to extinction by the mid-1800s, were reintroduced at Tidbinbilla Nature Reserve in the 1960s and have established a breeding population (Taylor and COG 1992). Invertebrates have not been well-studied but two species are of note: the migratory Bogong moth (*Agrostis infusa*) and Key's matchstick grasshopper (*Keyacris scurra*). While the 2003 bushfire devastated the faunal populations of Tidbinbilla, free-ranging species are recovering, along with their habitats.

Significant Animals

Some of the species occurring at Tidbinbilla are listed as threatened in the ACT or other jurisdictions (Table 6.1). This includes two captive species: the koala, which may have previously occurred in the Tidbinbilla area but there are no records to confirm this; and the brush-tailed rock wallaby, for which the last confirmed sighting in the ACT was at Wallaby Rocks (near Gibraltar Gap) in 1959. The only evidence of more recent presence has been in remains found in Namadgi National Park (ACT Government 1999b; Ormay 1996).

Table 6.1 Threatened animal species occurring at or recorded from Tidbinbilla and their conservation status (ACT, NSW, Commonwealth legislation only)

Animal species	Common name	ACT ²	NSW ²	Cwlth ²
<i>Falsistrellus tasmaniensis</i>	eastern false pipistrelle	-	V	-
<i>Petaurus australis</i>	yellow-bellied glider	-	V	-
<i>Dasyurus maculates</i>	spotted-tailed quoll	V	V	E
<i>Phascolarctos cinereus</i> ¹	koala	-	V	-
<i>Petrogale penicillata</i> ¹	brush-tailed rock wallaby	E (SPS)	E	V
<i>Daphoenositta chrysoptera</i>	varied sitella	V	-	-
<i>Lalage sueurii</i>	white-winged triller	V	-	-
<i>Hieraetus morphnoides</i>	little eagle	V	-	-

Notes: 1 Captive populations
2 Legislation: V: Vulnerable. E: Endangered. SPS: Special Protection status
ACT: *Nature Conservation Act 1980*, NSW: *Threatened Species Conservation Act 1995*
Cwlth: *Environment Protection and Biodiversity Conservation Act 1999*

Other species that occur at Tidbinbilla are uncommon, restricted to certain habitats, or of scientific interest due to their biological attributes. These include:

- Superb lyrebird (*Menura novaehollandiae*): The population on the eastern slopes of the Tidbinbilla Range has been studied since the early 1960s (Frith 1976; Robinson and Frith 1981; Fullagar 2008).
- Powerful owl (*Ninox strenua*): A large owl that inhabits tall eucalypt forests with suitable nest hollows for them and the large arboreal marsupials, primarily possums and gliders, on which they feed (Taylor and COG 1992).
- Platypus (*Ornithorhynchus anatinus*): The artificial habitats provided by the dams and wetlands of Tidbinbilla support a healthy and permanent platypus population.

- Key's matchstick grasshopper (*Keyacris scurra*): This species has been the subject of genetic research on account of its uncommon chromosomal variation (Rowell and Crawford 1995).
- Bogong moth (*Agrostis infusa*): Rocky summits at Tidbinbilla are sites for the summer aestivation (see **Glossary**) of large numbers of Bogong moths. They provide an important food source for ravens, currawongs, lizards and carnivorous mammals and were formerly a food source and focus of interaction for Aboriginal clans.
- Mountain galaxias (*Galaxias olidus*): This is the only naturally occurring native fish species at Tidbinbilla. Tidbinbilla River and its feeder streams support good populations especially where trout are absent or present in low numbers (Rutzou et al. 1994).

Management Considerations and Issues

The following considerations and issues are relevant to management of native animals:

- **Knowledge:** A sound knowledge of the biology and ecology of the species present at Tidbinbilla; their habitat requirements; threats such as predation, competition and disease; and their disturbance tolerance are all desirable for fauna management. Understanding of traditional Aboriginal knowledge of the fauna of the Tidbinbilla area should be sought, as a guide to management and educational and interpretive activities.
- **Habitat protection:** Protection of habitats within Tidbinbilla and connectivity to habitats elsewhere is important for animal conservation. Some species found in Tidbinbilla have large ranges or are migratory, such as the bird species that are altitudinal or latitudinal migrants.
- **Fire regimes:** Fire is a significant determinant of the distribution, abundance and survival of numerous native animals. Individuals and populations are killed directly, but fire can also result in loss of critical habitat attributes such as tree hollows, fallen wood debris, and abundance of food resources.
- **Dingoes/wild dogs:** Dingoes are dogs which have been in Australia for 3500–4000 years (Corbett 2008), and are native animals under the *Nature Conservation Act 1980*. Dingoes and domestic dogs are the same species and are capable of interbreeding. Based on DNA sampling from animals in the adjacent Namadgi National Park, 'hybrids' are best described as dingoes with a small component of domestic dog. Their coat colours vary, but they howl like dingoes instead of barking as domestic dogs do. They perform the role of a top predator and it is appropriate that they be retained at Tidbinbilla. Dingoes/wild dogs are a problem for sheep graziers whose properties adjoin the reserve and the animals need to be controlled in border areas.
- **Eastern grey kangaroos (*Macropus giganteus*):** The cleared grassy areas at Tidbinbilla and lack of predation provide good conditions for the eastern grey kangaroo. The population exhibits high increase rates and correspondingly high densities result e.g. 5.1/hectares in 2001. Issues arising at Tidbinbilla from unnaturally high numbers of kangaroos include the ecological effects of overgrazing; public concerns about animal welfare associated with dead or dying animals or their culling; and the impact on adjacent rural lands. Irregular shooting and formal culling have been undertaken at various times with a view to reducing grazing pressure to a more acceptable level (ACT Government 2010b). Observation of free-ranging kangaroos is an important part of the experience of many visitors who come to Tidbinbilla especially in the open grassy valley areas.

NATIVE ANIMALS

OBJECTIVE

- **Populations of native animal species are maintained in secure habitat.**

POLICIES

- An animal survey and monitoring program will be maintained as part of an ACT-wide biodiversity monitoring program. Targeted projects may be initiated in response to particular issues or circumstances.
- Management priority will be given to those species that are threatened, uncommon, vulnerable to disturbance or environmental change (including climate change), or are of regional significance.
- Kangaroo management, including population control, will be guided by the principles and policies of the ACT Kangaroo Management Plan and take account of the presence of adjacent rural land:
 - The kangaroo population will be maintained as a free-ranging population without direct management interventions unless interventions are needed to achieve specific ecological outcomes or to avoid undesirable impacts on the values of Tidbinbilla.
 - Suitable visitor educational material will be provided in relation to herbivore (kangaroo)-pasture dynamics, the biology and ecology of eastern grey kangaroos, and management of kangaroo populations.
 - Should seasonal conditions and food shortage result in starving kangaroos, euthanasia of animals may be undertaken especially around areas of high visitor use.

ACTIONS

- Maintain a fauna inventory to national standards and ensure that it is regularly updated as new knowledge becomes available.
- Identify and document traditional Aboriginal knowledge of the fauna of Tidbinbilla and, where appropriate, apply this to management and educational and interpretive activities.
- Continue to contribute to research and monitoring to record the post-2003 fire recovery, distribution, abundance and other details of animal species. Give priority to species that are threatened, uncommon, vulnerable to disturbance or environmental change (including climate change), or are of regional significance.
- Encourage and support research into the fauna of Tidbinbilla, especially where this accords with management priorities.
- Develop management guidelines for species that are declared threatened or are of conservation concern, in accordance with recovery plans and other relevant material.
- Control dingo/wild dog populations in areas bordering rural leases but maintain populations in other areas of Tidbinbilla. Coordinate dingo/wild dog management with the adjacent Namadgi National Park.
- Manage the eastern grey kangaroo population in accordance with the principles and policies in the ACT Kangaroo Management Plan.
- Provide information to park visitors on the fauna of Tidbinbilla and its management.

6.9 Pest Species

Introduced plants and animals can become environmental pests if they establish and thrive in the wild at the expense of ecological processes and native populations, or some other valued attribute such as access, visual amenity or productive capacity. Native species can also flourish to excess in response to changes in land use or other significant environmental events that result in more favourable environmental conditions for that species.

Introduced plants and animals are now part of most 'natural environments' influencing the ecosystems in which they live. Some appear to be relatively benign but many are capable of major impacts. A strategic approach to managing pest species involves determining priorities based on the damage that particular species cause. Whilst eradication of an established pest may be desirable, this is rarely feasible except at a local scale. Even then, continuing vigilance with an adequate response capacity is essential.

The management of pest plants and animals and the damage they cause is a particular challenge for land managers. Associated costs are substantial and usually ongoing, therefore an efficient and effective management program is required that is part of a coordinated strategy if enduring cost-effective benefits are to be achieved. While the management of pest plants and animals is a routine land management responsibility, sometimes broader or statutory control measures may need to be accommodated. The *Pest Plants and Animals Act 2005* provides regulatory authority for the management of pest plants and animals in the ACT. Pest species may be declared and statutory controls may be invoked or management actions required as a response to related economic, social or environmental threats.

The *ACT Pest Animal Management Strategy 2012-2022* (ACT Government 2012) and the *ACT Weeds Strategy 2009-2019* (ACT Government 2009a) are two key documents in relation to invasive species management in the ACT. Any management actions should be guided by these two strategies (and any subsequent revisions).

Pest Plant Management

Pest plants are defined as species that are having undesirable ecological, physical, economic or aesthetic impacts due to their characteristics and location. They may include non-Australian plants, some Australian plants from outside the local region and, in exceptional circumstances, plants that occur naturally in an area. From a biodiversity conservation perspective, pest plants displace native species, reduce habitat quality, modify vegetation structure and alter ecological functions.

Control of pest plants is a significant and continuing management responsibility across the parks and reserves system and Tidbinbilla has had a program in place for many years. This program, guided by the ACT Weeds Strategy, is reviewed on an annual basis and modified as required. Pest plants of longstanding concern include blackberry (*Rubus fruticosus*), St John's wort (*Hypericum perforatum*), Paterson's curse (*Echium plantagineum*), serrated tussock (*Nassella trichotoma*) and verbascum (*Verbascum* spp.). A particular issue since the 2003 bushfire has been control of regenerating pine wildings and other non-native species in the former softwood plantations of Jedbinbilla and Gibraltar. Other weeds are emerging threats, such as African love grass (*Eragrostis curvula*), which has rapidly spread through much of the Upper Murrumbidgee Catchment; and hawkweeds (*Hieracium* spp.), which have just begun to appear in Australian subalpine environments and are highly invasive of those areas and nearby cool temperate grassy environments (see *Alert List for Environmental Weeds*: orange hawkweed <<http://www.weeds.gov.au/publications/guidelines/alert/index.html>>).

Management Considerations and Issues

The wide and increasing range of weed species, their varying levels of threat to native ecosystems, and the cost and difficulty of controlling many species mean that carefully targeted approaches to weed management are required. The following considerations are relevant to Tidbinbilla:

- Weed management requires persistence and vigilance and is resource-intensive. Management of existing infestations requires regular monitoring, mapping and control measures.
- New infestations of important weed species should be reported and eradicated, where possible, before the species has become well established.
- Technical expertise and local knowledge is required to devise the most effective, cost-efficient strategies for exclusion, control or eradication.
- A coordinated, regional approach to weed management is important, involving rural neighbours and managers of other reserved lands.
- Opportunities should be investigated to increase community involvement in all aspects of weed management at Tidbinbilla.
- Climate change may increase the level of damaging weed invasions in areas like the subalpine environment. Minimising disturbance to intact native vegetation and effectively rehabilitating disturbed or modified areas are important in ensuring that changed environmental conditions do not unduly favour pest plants.

- Burgan (*Kunzea ericoides*) and other native shrubs are colonising the valley and foothill areas of Tidbinbilla (s. 6.4). Key considerations in dealing with burgan are:
 - Any program to control burgan needs to be related to the management objectives for the land such as maintaining vistas, keeping areas open for viewing of free-ranging kangaroos, conserving cultural landscapes, and maintaining *Themeda* grassland habitat for Key's matchstick grasshopper.
 - The long term maintenance of desirable attributes of the valley and foot-slopes areas involves deciding what areas should be maintained as open grassland, left as shrubland, or (possibly) restored to woodland or forest cover. The appropriate means of determining this is in a master plan, followed by detailed planning and design to guide future capital works decisions in the more intensively used parts of Tidbinbilla.
 - Any program to control burgan and manipulate the vegetation will be costly and long-term and involve consideration of the role of herbivores (mainly rabbits and eastern grey kangaroos) in reducing the grass sward and making conditions more conducive to the spread of burgan. Trials of methods should be evaluated e.g. herbicide use, physical removal, and tree planting in areas where re-establishment of grassland is not considered necessary, aimed at shading out shrub cover.

PEST PLANTS

OBJECTIVE

- **The damaging impacts of pest plants on the values of Tidbinbilla are minimised through strategic and effective management programs.**

POLICIES

- An integrated program of pest plant management will be undertaken at Tidbinbilla that is consistent with the ACT Weeds Strategy, and includes cooperation with adjacent land managers and evaluation of the effectiveness of previous programs.
- Management will aim to halt the further expansion of burgan and associated shrub cover in valley and foothill areas.
- Weed distribution and spread will be monitored on a systematic basis to detect trends and change and to assist in the assessment of the effectiveness of management programs.
- Weed control programs will comply with legislative and policy requirements for the safe and appropriate use of chemicals.

ACTIONS

- Design and undertake management programs for pest plants in accordance with the ACT Weeds Strategy, weed control priorities, and in cooperation with adjacent land managers.
- Maintain alerts for emerging environmental weeds and, where possible, eradicate new infestations before species become established.
- Provide information to assist the community in identifying and reporting new weed species of concern (e.g. hawkweeds).
- Investigate opportunities to increase community involvement in weed management in Tidbinbilla.
- Undertake rehabilitation of areas disturbed by management activities, or the provision of infrastructure or services, to minimise opportunities for weed invasion.
- Develop a management program for burgan and other shrub vegetation in the Tidbinbilla Valley related to management objectives for particular areas. Undertake control of this shrub vegetation in valley and foothill areas to maintain vistas, keep areas open for viewing of free-ranging kangaroos, and conserve cultural landscapes.

Pest Animal Management

Pest animals can have significant harmful impacts on biodiversity, habitat, water quality, recreational and scenic quality, and productivity of adjacent rural lands. They can also contribute to the spread of pest plants and pathogens. At Tidbinbilla, pest animal management programs are a longstanding routine land management task. Historically, the main species of concern have been pigs, rabbits, foxes and wild dogs (Table 6.2). More recently, the European wasp has emerged as a significant environmental and social threat.

Table 6.2 Pest animals at Tidbinbilla: status and control programs

Pest animals	Status	Control programs
Feral pig ^{1,2}	Groups of feral pigs appear in Tidbinbilla each year.	Trapping and/or baiting whenever fresh signs are found on the reserve.
Dingo/wild dog ^{1,2}	An important apex predator. Not considered a pest animal in the reserve (but controlled in boundary areas).	Seasonal 1080 baiting and trapping in boundary areas to maintain stock protection buffer.
Fox (European red fox) ^{1,2}	Present.	Seasonal baiting with 1080 and also killed as part of wild dog baiting.
Rabbit ^{1,2}	Present in large numbers.	Warren ripping, rabbit haemorrhagic disease virus releases, ground baiting, fumigation. Follow-up shooting.
Hare (European brown hare) ²	Local populations.	Shooting.
Goat ^{1,2}	None known on reserve.	Monitoring for goat incursion followed by trapping/shooting to control.
Deer (sambar, red and fallow deer) ¹	None known on reserve but emerging pest species in the ACT and region. Sightings in Namadgi NP and ACT river corridors.	Informal monitoring. Collaboration with other reserve managers on developing appropriate control methods.
Feral cats ²	Present.	Trapping/shooting around buildings and in animal enclosures.
European wasp ¹	Abundant in Tidbinbilla Valley. Voracious predator of native invertebrates. Attracted to picnic areas. Aggressive species with painful multiple stinging capability.	Control and response measures: <ul style="list-style-type: none"> public education, including identification, food handling and disposal nest destruction emergency response capability for allergic reactions closure of affected areas if risk deemed unacceptable.

Notes: 1 Listed in *Pest Plants and Animals (Pest Animals) Declaration 2005* (No. 1) made under the *Pest Plants and Animals Act 2005*.

2 Listed in *ACT Pest Animal Management Strategy 2012-2022* (ACT Government 2012).

Management Considerations and Issues

The following considerations are relevant to pest animal management:

- In order to manage pest animal impact in an enduring and cost-effective way, a strategic approach to planning, managing and evaluating control programs is essential, as outlined in the *ACT Pest Animal Management Strategy 2012-2022* (ACT Government 2012). The focus is on reducing damage caused by pest animals rather than reduction in pest numbers as an objective in itself.

- Pest animal control programs need to consider:
 - a regional approach and involvement of neighbours
 - the welfare of the pest animals
 - public risk associated with control methods
 - implications for non-target animals and predator-prey interactions.
- Incursions of emerging pest species should be reported and, where possible, control action taken.
- A high level of education, nest destruction and emergency response capability should be maintained in relation to European wasps, given the high number of visitors to Tidbinbilla.

PEST ANIMALS

OBJECTIVE

- **The damaging impacts of pest animals on the values of Tidbinbilla are minimised through strategic and effective management programs.**

POLICIES

- An integrated program of pest animal management will be undertaken at Tidbinbilla that is consistent with the *ACT Pest Animal Management Strategy 2012-2022*, and includes cooperation with adjacent land managers and evaluation of the effectiveness of previous programs.
- Priorities for pest animal control will be guided by management objectives for, and pest animal impacts on: landscape, cultural heritage and biodiversity conservation; ecological restoration; and public safety.
- Pest animal control programs will comply with: (a) relevant ACT and national codes of practice in relation to animal welfare; and (b) legislative and policy requirements in relation to occupational health and safety and environmental protection.

ACTIONS

- Design and undertake management programs for pest animals in accordance with the *ACT Pest Animal Management Strategy 2012-2022* and pest animal control priorities, and in cooperation with adjacent land managers.
- Maintain alerts for emerging pest species (e.g. deer) and control methods.
- Collaborate with research organisations and other Australian Alps national parks agencies on the development of cost-effective, efficient, humane and target-specific methods of pest animal control.
- Continue to develop the management response to the threats to public safety and biodiversity posed by the European wasp, including education, nest destruction and emergency response capability. Close parts of the reserve at times when the risk to public safety is unacceptable. Focus the management response to areas of high public use.

6.10 Fire Ecology

This section briefly outlines key aspects of fire ecology relevant to Tidbinbilla. ACT fire management arrangements are contained in Chapter 11.

Much of the Australian flora and fauna has evolved with fire as a natural environmental factor and some species rely upon particular fire regimes for continued survival. Fires occur as discrete events but their effects on the environment, ecological communities, and component species depend upon the history of these events, the seasons in which the fires occurred, and their properties (e.g. intensity). Together, these comprise a fire regime (Gill 1975). Particular fire regimes can favour some plant and animal species (including invasive species) to the detriment of other species. The size and pattern of areas burnt is also an important factor, particularly in habitat that is fragmented as a result of development.

Some montane vegetation communities, as occur at Tidbinbilla, need fire to preserve biodiversity. For example, alpine ash forests need high intensity fires at long intervals (30 to 100 years), which

kill the trees, but result in canopy removal and the release of millions of seeds for extensive germination in the ash bed. Too frequent fires result in loss of the trees before they have reached seed bearing age and therefore loss of the forest.

If the role of fire in the processes that form and maintain the natural environment is to be maintained, the imposition of prescribed fire regimes is necessary. Fire is also one of the few factors controlling long-term patterns in natural communities that land managers can influence. These considerations need to be balanced against other factors that include protection of life and property; significant staffing, equipment and other cost implications; and inadequate knowledge of many of the ecological relationships and processes involved. There is often a conflict between the range of fire regimes species are able to tolerate and those required to achieve a reasonable level of fire protection.

Few examples exist of a comprehensive ecologically-based fire regime that has been imposed over a large area. Incorporation of ecological considerations into broader fire risk management strategies is the more typical scenario. The influence of unpredictable wildfires also needs to be accommodated.

Researchers (Banks 1982, 1989; Pryor 1939) concluded that the fire history of the western ranges of the ACT before the arrival of Europeans was one of occasional, intense wildfires. With the arrival of Europeans, the fire regime changed dramatically, with the frequency of fires increasing by more than five times during the period 1850 to 1950, reducing thereafter. The written record indicates that Tidbinbilla was affected by significant wildfires in 1920, 1926, 1939 and 2003 (Carey et al. 2003). It is likely that large scale, high intensity fires will occur again. The 2003 fire was the largest and most intense, with most of Tidbinbilla being severely burned. Such high intensity fires can have significant impact on a range of environmental values, including water quality. Typically, severe fires have occurred after a period of drought. The gap of 64 years between the 1939 and 2003 fires is a relatively long fire-free period for the dry sclerophyll vegetation that characterises much of Tidbinbilla. The associated build up of seed in the soil may explain the exceptional rate of regeneration that has been observed since 2003.

Other than limited burning along the ring-road to enhance 'green pick' for kangaroos, prescribed burning for specific conservation purposes has not been undertaken at Tidbinbilla, and is unlikely to be contemplated in the near future in the aftermath of the 2003 bushfire. However, this situation will be subject to review as research information comes to hand and ACT fire management strategies develop generally. An important area of work in relation to integrating ecological and risk management considerations is to develop an understanding of the responses to fire by native species. The response of plant species to fire can be synthesised into fire management thresholds that define the time after fire necessary for species to regenerate and become fire tolerant prior to the next fire. These thresholds provide for the long-term maintenance of plant species in vegetation communities and can provide important information for fire management planning (Kitchin 2008). The *Tidbinbilla Regional Fire Management Plan 2009-2019* (ACT Government 2009b), prepared under the *Strategic Bushfire Management Plan for the ACT* (ACT ESA 2009), incorporates contemporary research results on preferred fire regimes for vegetation. The challenge is to expand these to include fauna habitat thresholds.

FIRE ECOLOGY

OBJECTIVE

- **Fire regimes that maintain biodiversity, catchment and ecological processes and include the fire sensitivities of significant ecological communities and species are incorporated into fire management strategies for Tidbinbilla consistent with broader fire management planning across the parks and reserves system.**

POLICIES

- Protection of ecological and hydrological values will be incorporated into fire management planning at Tidbinbilla.
- Special recognition will be given in fire management planning to the requirements of species and ecological communities of particular conservation concern.
- Research results on preferred fire regimes for native plant and animal communities will be incorporated into fire management strategies.

ACTIONS

- Plan for fire protection as part of the annual Bushfire Operational Plan prepared by Parks and Conservation.
- Undertake fire management planning for Tidbinbilla to integrate protection of ecological and hydrological values into fire management strategies.
- Ensure that on-ground fire management activities (e.g. fire trail construction, bushfire suppression and prescribed burning) are undertaken in ways that recognise and protect significant ecological and hydrological values.

6.11 Ecological Rehabilitation

Returning disturbed, degraded or modified ecosystems to a condition where natural attributes and processes are present and operating is an increasingly important conservation discipline. The degree of human intervention applied to achieve desired outcomes will vary. Regeneration, restoration and reinstatement (see **Glossary**) describe increasing levels of intervention that are grouped under the term ‘rehabilitation’.

Rehabilitation can simply mean the removal of a disturbing influence to allow ecological processes to recover independently or it can involve a more complex process such as restoration and reinstatement of native species in conjunction with control or elimination of ecological threats. Rehabilitation projects need to give careful attention to objectives. Given the dynamics of the natural environment, rarely is it possible to recreate previously existing environmental conditions, even when there is reasonable confidence that these are known.

Rehabilitation objectives need to be informed and, if necessary, tempered by other land management objectives that may require retention of a modified environment. At Tidbinbilla, the historical evidence of human occupation and associated land use provides a significant cultural heritage legacy that warrants retention and protection in particular areas. The location of management infrastructure, visitor facilities and asset protection zones for fire, as well as visitor safety, may also mean it is preferable to retain modified vegetation in some areas. Rehabilitation projects should be monitored and the results recorded and assessed against the original objectives. This will assist in developing, refining and undertaking new and continuing projects.

The reinstatement of locally extinct species to the wild, particularly animals, is a complex task requiring the availability of suitable genetic stock, satisfying landscape and habitat requirements, and controlling causes of the species original decline.

The major rehabilitation task in Tidbinbilla in the life of this management plan is the re-establishment of native vegetation in the former pine plantation areas at Jedbinbilla and Gibraltar. The strategy is to foster natural regeneration and control degrading influences such as soil erosion and weed invasion. As noted in s. 4.2, a number of community groups have a close association with Tidbinbilla and some have undertaken ecological rehabilitation work, including weed control in Jedbinbilla. There is potential for further community involvement in rehabilitation projects at Tidbinbilla.

ECOLOGICAL REHABILITATION

OBJECTIVE

- **Disturbed environments are rehabilitated to a stable condition that is in accordance with other management objectives for particular areas.**

POLICIES

- Ecological rehabilitation will be assisted by systematic, scientifically-based programs where required.
- Management activities that have the potential to disturb natural environments will be designed to minimise associated risks and provide for rehabilitation as necessary.
- Proposals for any free-ranging reinstatement of a locally extinct species will be subject to careful scientific scrutiny according to the principles of contemporary conservation biology.
- Opportunities will be identified for the community to participate in ecological rehabilitation programs.

ACTIONS

- Undertake a structured, long-term rehabilitation program for Jedbinbilla and Gibraltar with the objective of re-establishing native ecosystems.
- Continue to involve community groups in the planning, undertaking, monitoring and data recording of ecological rehabilitation projects at Tidbinbilla.

7

Cultural Values



Placenames form an important part of the Indigenous heritage of the area. The name Tidbinbilla (originally Jedbinbilla, Tidbinbilly or Tidmanbilly) is understood to be an Aboriginal word meaning ‘the place where boys become men’, and the proud, rocky summit of Tidbinbilla Mountain was significant as a place of initiation.

(Matthew Higgins 2009)

7.1 Primary Management Objective

Cultural heritage within the Tidbinbilla precinct is identified, conserved, and where appropriate, interpreted and promoted to retain and foster community associations and an appreciation of the past.

7.2 Background

Tidbinbilla has important Aboriginal and European cultural heritage values and these have been well documented, though more remains to be done. This plan gives increased recognition to the identification, conservation and interpretation of cultural heritage values. This has the potential to make an important contribution to the visitor experience of Tidbinbilla and understanding of the long history of human occupation of the Southern Tablelands and parts of the Australian Alps.

7.3 Aboriginal Cultural Heritage

Three Aboriginal tribal groups have been recorded for the tableland and mountain region of south-eastern New South Wales and the ACT in which Tidbinbilla is situated. These groups are the Ngunnawal, Ngarigo and Walgalu. There is wide acceptance among Aboriginal and non-Aboriginal heritage professionals that Tidbinbilla was part of the area initially occupied by a large linguistic and socially defined group called the Ngunnawal, as identified and mapped in the ethno-historical records (Feary 2010).

Archaeological research suggests that there was sufficient food and shelter for Aboriginal people to occupy lower elevation areas of the mountains, such as the foothill valleys, on a permanent, rather than a seasonal basis. As well as being the Country of the Ngunnawal, the area that includes Tidbinbilla was also a gathering place for a number of other language groups that made seasonal visits to the area. Much has been written on the annual harvesting of Bogong moths in the Brindabella and nearby ranges by groups from as far away as the Shoalhaven River. These seasonal gatherings, which were probably for purposes of trade, exchange of knowledge, intermarriage and ceremony, highlight the complexity of Aboriginal society and political organisation prior to European settlement. Bluett (1954) described the secluded hills of Tidbinbilla as being the ‘last meeting ground for the scattered fragments’ of the local Aboriginal people as European pastoralism advanced into the upland valleys from the late 1830s.

At the time of the last glacial maximum, about 20 000 years ago, sea level was more than 100 m below its present level and the Southern Tablelands a zone of cold, wind-swept, open grassland (Mulvaney and Kamminga 1999). The dating of Aboriginal use of the Birrigai rock shelter from this time (approximately 21 000 years ago) is significant in what would have been an inhospitable, sparsely populated upland landscape. Birrigai rock shelter was one of a number of sites that dated Aboriginal occupation of south-eastern Australia back to the Pleistocene. Also present in this landscape were some of the now extinct megafauna. Excavations from the rock shelter suggest a marked increase in occupation in the last 3000 years (Flood et al. 1987).

The name ‘Tidbinbilla’ is thought to derive from the similar ‘Jedbinbilla’ meaning a place of initiation (Wright 1923), referring in particular to Tidbinbilla Mountain (1615 m). The valley area and footslopes appear to have been a focus of settlement and intensively used. Flood (1980) attributed this to three factors: (a) the much more extensive area of wet sclerophyll forest compared to the Gudgenby and Orroral valleys; (b) its very sheltered position; and (c) the availability of stone

supplies such as chert, quartzite and quartz for making tools. Occupation of the Tidbinbilla Valley gave access to a wide range of plant and animal foods. From the valley, Aboriginal people could ascend to sites such as Billy Billy Rocks in the Gibraltar Range to collect Bogong moths.

The Tidbinbilla area has attracted archaeological survey and research since the 1970s, most notably by Flood (1973, 1980, n.d.) and Flood et al. (1987). This has revealed open campsites, rock shelters with archaeological deposits, large quantities of artefacts, an art site and stone arrangements (Bulbeck and Boot 1991). The three most important sites identified from these surveys were Birrigai Rock Shelter, Bogong Rocks and Tidbinbilla Mountain (ACT Government 1999a). Following the destruction of the pine plantation on Block 60 (Jedbinbilla) in the 2003 bushfire, a comprehensive Aboriginal archaeological survey was undertaken of the area, taking advantage of the enhanced ground surface exposure. An extensive artefact assemblage was found, similar to that recorded at other sites in the region. The presence of four rock shelters is the most distinctive feature (Barber et al. 2004). The sites within Jedbinbilla contribute valuable scientific information about Aboriginal occupation of the area (and region) and are an important addition to the previously recognised Aboriginal cultural heritage values of Tidbinbilla Nature Reserve.

The dislocation of Aboriginal people from their lands following the effects of European settlement means that there has not been a continuous physical connection of Aboriginal people with Tidbinbilla. By the 1870s, the disintegration of the Aboriginal groups that formerly occupied or visited the tablelands and mountains was virtually complete (Meyers 2010). Ngunnawal people did not continue to live in the Tidbinbilla area. However, spiritual connection with the landscapes and environment of the region (Country) remained and this has found recent, renewed expression.

7.4 European Cultural Heritage

The Tidbinbilla Valley has a history of European settlement dating back to the late 1830s. Grazing, agriculture, forest uses (timber, eucalyptus oil) and softwood plantations have been part of the history, as well as early nature conservation initiatives (creation of reserves in the early 1900s and establishment of the koala enclosure at Hurdle Creek in 1939). The latter contributed to the later idea to establish Tidbinbilla Nature Reserve (Bulbeck and Boot 1991). Destruction of structures following the establishment of the nature reserve in the early 1960s, revegetation of previously cleared areas, regrowth of coppiced tree species, new developments at Tidbinbilla, and the 2003 bushfire and subsequent recovery have resulted in much of the fabric of past European settlement being lost or made less conspicuous. However, significant elements remain.

Beginning with squatters' runs, land ownership in the area following European settlement evolved through the mixed farms of small selectors, to large-scale sheep grazing, small farming experiments and the early development of hobby farms. The first recorded European settlement was a squatting run at the foot of Mt Tidbinbilla in 1839 (Flint 1983). The first land purchases occurred in the 1860s and there were more selections in subsequent decades. A range of structures was built in the valley during this agricultural and pastoral period, including small bush schools. In the 1890s, forest reserves were declared as well as Tidbinbilla Peak Trig Reserve (1897). In 1901 two large tracts of land were reserved and the southern one of these formed the basis of a fauna reserve and scientific station in 1936 (Bulbeck and Boot 1991). By the mid-twentieth century the population had declined, with only four families resident in the valley in the late 1950s. In the early 1960s some of the area was divided up for sale for hobby farms. This was short lived as the Commonwealth began to resume land in 1962 to establish Tidbinbilla Nature Reserve.

The most recent comprehensive European cultural heritage survey was by Bulbeck and Boot (1991). Their report documented 45 historical sites within or associated with Tidbinbilla Nature Reserve. These comprised: (a) homesteads and homestead sites; (b) other dwellings and dwelling sites; (c) remnants associated with residences and farming use such as fruit tree plantings, mounds, stone concentrations, fireplaces, fences, sheep dips, piggery remnants, cultivation plots and rubbish dumps; (d) a fence line and clearing associated with the Hurdle Creek koala enclosure; (e) remnants of eucalyptus oil distilleries; and (f) the 1960s lyrebird observation hut (moved to the Works Depot). A house ('Dalsetta') built in the early 1960s on one of the hobby farm subdivisions

became a ranger's residence. Particular recognition has been given to two buildings dating from the late 19th century pastoral period: Nil Desperandum pisé house and Rock Valley homestead (see Table 7.1). Both of these houses were severely damaged in the 2003 bushfire. The Bulbeck and Boot report did not include Birrigai where a cemetery is located.

Many of those who used to live in the Tidbinbilla Valley and their descendants have strong associations with the area, and Tidbinbilla features in research on the history of the ACT and the mountain regions in particular (Higgins 2009). There are also histories of some of the families and the activities that occurred there (s. 10.5). The Tidbinbilla Pioneers Association is active in documenting the history of the area.

7.5 Cultural Heritage Values

Cultural Significance (defined in Chapter 2)

A key principle in cultural heritage conservation is the need to assess the heritage importance or significance of a place before making decisions about how to manage it. The ways in which a place is important are its heritage values. Assessment of heritage significance provides a basis to gain support from the public, interest groups, land managers and government agencies for the protection and conservation of places (Australian Heritage Commission 2000). Such assessment needs the characteristics of the place to be considered against criteria established for that purpose. Assessing significance involves making value judgments and ultimately concluding that some places are more important (or significant) than others and therefore warranting more management input. There will be differing community perceptions of the heritage values of particular places.

Social Value

Social value is based on the attachment of people to places such as Tidbinbilla. This is more than an attachment to the physical elements of a place, such as archaeological sites, buildings or artefacts. It is also an attachment based on an intellectual, spiritual or emotional connection to the landscape or specific places and objects; a connection to previous occupants; and/or a connection to community identity, traditions, customs and particular activities and experiences (Australian Heritage Commission 2000). Social value expresses the importance of places to individuals and communities, even though those places may not be formally recognised as having cultural heritage significance and may not be on heritage registers.

7.6 Recognising Cultural Heritage Values

Heritage Legislation and Registers

Cultural heritage values are formally recognised by the inclusion of places or objects in registers or listings under Commonwealth and state/territory legislation. They may also be recognised in non-statutory ways through classification or documentation by the National Trust of Australia or by professional organisations. The main heritage legislation applicable to the Tidbinbilla precinct is the *Heritage Act 2004* (ACT) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Cwlth). These acts set out criteria for determining heritage significance. Tidbinbilla Nature Reserve is included on the National Heritage List as part of the Australian Alps National Parks and Reserves (EPBC Act) and a number of places in the precinct are either registered or nominated to the ACT Heritage Register (Table 7.1).

Heritage registers and lists are updated as places move through nomination and assessment processes and should always be consulted for the latest information before commencing works or other activities that have any impacts in the landscape. All ACT Government agencies are required to identify, protect and manage heritage places and objects for which they are responsible. The appropriate basis for this is a conservation management plan.

Australia's National Heritage (EPBC Act) comprises exceptional natural and cultural places that contribute to Australia's national identity. National Heritage places are a *matter of national*

environmental significance under the EPBC Act. Under the Act, an action will require approval from the (Commonwealth) Environment Minister if the action is likely to have a significant impact on a *matter of national environmental significance* and the action is not subject to certain specified exceptions. The latter include actions taken in accordance with Commonwealth accredited management plans. An ‘action’ is defined in the EPBC Act and ‘significant impact’ is defined in EPBC Act policy statements (DEH 2006a, 2006b).

For places on the National Heritage list that are owned by state or territory governments, the Commonwealth must endeavour, in cooperation with the relevant government, to ensure that a management plan is prepared and implemented for the National Heritage place (EPBC Act: s. 324X). The management plan should be consistent with National Heritage management principles established in regulations under the EPBC Act (s. 324Y) (see Appendix 5).

Under the new national heritage system that commenced on 1 January 2004, the former national system based on the Register of the National Estate ceased to have a statutory basis from February 2012. This transition period allowed time to transfer places to other local, state, territory and Australian Government registers. More information can be obtained at <<http://www.environment.gov.au/heritage/places/rne/index.html>>. The status of the three places at Tidbinbilla on the now non statutory Register of the National Estate is shown in Table 7.1.

Cultural Heritage of the Australian Alps

Cultural heritage values are an important component of the values that give the Australian Alps their significance. Significant cultural themes that contributed to the National Heritage listing include: past gatherings of Aboriginal groups related to the presence of Bogong moths; seasonal grazing from the 1830s; scientific research; aesthetic characteristics; strong community and/or cultural associations; and a place of special association with individuals that are important in Australia’s natural or cultural history (Commonwealth of Australia 2008).

Table 7.1 Identified heritage places and objects at Tidbinbilla

ACT Heritage Register		
Note: The current ACT Heritage Register should always be consulted for the latest information before commencing works or other activities that are likely to have an impact in the landscape.		
Place	Status	Description
Aboriginal		
Birrigai Aboriginal Rock Shelter	Nominated	This is the only Aboriginal site in the Southern Highlands dated to 21 000 years BP (the maximum of the last (Pleistocene) glacial period).
Aboriginal Places on Fire Trails and Containment Lines in Tidbinbilla Nature Reserve and Birrigai	Registered	No specific description is included in the register.
Aboriginal Places along the Gungahlin Drive Extension and in Tidbinbilla Nature Reserve	Registered	This includes seven artefact scatters in Tidbinbilla Nature Reserve recorded in 2004.
Aboriginal Places on Fire Trails and in the Koala Enclosure at Tidbinbilla	Registered	This contains seventeen artefact scatters in Tidbinbilla Nature Reserve recorded in 2004.
Aboriginal Place in Tidbinbilla Nature Reserve	Registered	This site contains Aboriginal skeletal remains within a cultural deposit.
Aboriginal Places in Block 60 (Tidbinbilla) Forest	Registered	The places comprise 67 Aboriginal sites (4 rock shelters, 63 stone artefact scatters) within Block 60 (Jedbinbilla). These were recorded during cultural heritage surveys of Block 60 in 1992 and 2003 (following the January 2003 bushfire which destroyed the pine plantation on the site).

Aboriginal Places - Tidbinbilla Nature Reserve and Birrigai	Registered	These places comprise 24 Aboriginal sites (stone artefact scatters) recorded in 2003.
Aboriginal Places in Gibraltar, Ingledene and Miowera Forests	Registered	This listing contains seventeen sites (artefact scatters) in Block 223 (Gibraltar), recorded in 1991.
European		
Nil Desperandum	Nominated	Nil Desperandum (Block 143) is a rammed earth house built between 1896 and 1899. The building was extensively damaged in the 2003 bushfire but has been restored.
Rock Valley	Nominated	Located in the valley floor, Rock Valley homestead was built in 1895, with later additions. The homestead was extensively damaged in the 2003 bushfire but has been repaired and stabilised.
Natural		
Keyacris scurra (Grasshopper habitat)	Nominated	This site is a treeless area in open woodland in a saddle near the summit of Gibraltar Peak. <i>Keyacris scurra</i> exhibits unusual chromosomal variation which has been the subject of extensive genetic research.
Commonwealth: National Heritage List		
Place	Status	Description
Australian Alps National Parks and Reserves	Included on list (gazetted 7/11/2008)	This listing comprises eleven national parks and nature reserves stretching across the south-eastern Australian high country from the Brindabella National Park (near Yass, NSW) to Baw Baw National Park (near Erica, Vic.). It includes Tidbinbilla Nature Reserve and Namadgi National Park.
Commonwealth: Register of the National Estate (RNE)		
Note: The statutory basis of this register ceased in February 2012.		
Place	RNE Status	Status under New National Heritage System
Tidbinbilla Nature Reserve, Tidbinbilla Rd, Tharwa, ACT (Place ID: 13366)	Registered	National Heritage List (see above)
Nil Desperandum and surrounds, Gilmores Rd, Tharwa, ACT (Place ID: 17603)	Registered	Nominated to ACT Heritage Register
Keyacris Scurra Grasshopper Habitat, Corin Rd, Tharwa, ACT (Place ID: 18875)	Registered	Nominated to ACT Heritage Register

7.7 Management Considerations and Issues

Aboriginal Cultural Heritage

Recognition of traditional Aboriginal culture, conservation of related artefacts, sites and places, and ongoing connection by Aboriginal people to their Country are important considerations for this management plan. The comprehensive archaeological survey of Jedbinbilla in 2003 (Barber et al. 2004) has added significantly to knowledge of the cultural heritage values of the area. Widespread artefact evidence, scientific documentation, and presence of sites, such as the rock shelters and rock assemblages where Bogong moths were collected, present the potential for a much more comprehensive interpretation of Aboriginal cultural heritage at Tidbinbilla, in its Southern Tablelands and Australian Alps contexts.

The following considerations and issues are pertinent to management:

- Tidbinbilla is important for the presence of Aboriginal heritage sites and for its place in the scientific study of the Aboriginal occupation of Australia prior to European settlement, with one site dated to the Pleistocene at the time of the last glacial maximum and lowered sea-level.
- There is potential for further archaeological and other research to be undertaken at Tidbinbilla related to Aboriginal connection with the area.
- Aboriginal cultural heritage values have statutory recognition (ACT Heritage Register, National Heritage List (through the listing of Tidbinbilla Nature Reserve)). Management of Aboriginal cultural heritage should conform to the statutory requirements for those registers.
- A strategic approach to the interpretation of Aboriginal cultural heritage at Tidbinbilla should be adopted, involving an inventory of all sites, knowledge about them and their significance. In such an approach, all known sites and places are considered within a broader cultural landscape framework, taking into account factors such as significance, location, vulnerability, and logistical and reserve management matters (Feary 2010). The majority of archaeological sites are not suitable for public interpretation e.g. due to their cultural sensitivity or vulnerability. Sites chosen should provide visitors with an experience that increases their knowledge and understanding; however, the risk of damage to sites that are important to Aboriginal people and for their scientific values needs careful consideration.
- For both the ACT Heritage Register and the National Heritage List, a conservation management plan is recognised as the appropriate basis for management of Aboriginal heritage places. An appropriate approach for Tidbinbilla is to prepare a conservation management plan that covers all Aboriginal cultural heritage places in the precinct, thereby maintaining a 'cultural landscape' perspective. Such a plan would include more detail for specific high conservation value sites, those promoted to the public, and those identified as requiring more detailed management. Widespread artefact scatters would generally be dealt with by overall policies, rather than site-based plans. These policies would provide for monitoring, stabilisation works where required, and management policies and actions that discourage public access to, or the seeking out, of artefacts.
- Consultation with Aboriginal people (particularly traditional owners) is a recognised first step in managing Aboriginal cultural heritage places. (See: *Ask First: A guide to respecting Indigenous heritage places and values* (Australian Heritage Commission 2002b)).
- Access to Tidbinbilla and conduct of activities by Aboriginal people for cultural purposes (e.g. 'cultural camps') should be addressed in a consultative process that establishes protocols. These protocols would need to determine suitable locations, numbers of people, allowable activities, types of facilities to be provided, who would be entitled to be involved, and how that would be determined. Such activities are undertaken on reserves in other parts of Australia and this experience could assist the development of arrangements for Tidbinbilla should the need arise (see, for example, DECCW NSW 2006).

- The recognition of traditional Aboriginal ecological knowledge and the interest of Aboriginal people in managing the natural environment, which is part of their cultural heritage.
- Management of Aboriginal cultural heritage needs to consider:
 - the extent to which Tidbinbilla can assist Aboriginal people, long dispossessed, to reconnect with their land
 - how to best recognise the interests of Aboriginal people in the protection and conservation of their heritage, including their involvement in the management of cultural information and of research
 - the involvement of Aboriginal people in survey, monitoring and research related to the record of Aboriginal occupation of the Tidbinbilla area
 - what provision should be made for access by Aboriginal people to their sites and places, including access for transmission of cultural knowledge or the gathering of materials for cultural or ceremonial purposes, and vehicle access by elders to sites not open to public vehicle access.
 - the extent to which management of Tidbinbilla can assist in the development of employment, education and training opportunities for Aboriginal people
 - the best means to protect and conserve Aboriginal sites and objects, and what particular risks need to be planned for
 - the level of access by visitors to Tidbinbilla that will be allowed to Aboriginal cultural heritage places (ranging from prohibition to open access) in recognition of cultural sensitivity
 - the interpretation of Aboriginal cultural heritage places as part of the recreation, tourism and education policies in the plan. Not providing information can be a form of protection in some circumstances
 - the desire of Aboriginal people to undertake the interpretation of their cultural heritage at Tidbinbilla
 - integration of the important Aboriginal cultural heritage values of Jedbinbilla, where there are four rock shelters, into the management of those values in the precinct.
- Recreation and tourism need careful consideration where they could be incompatible with the significance or management objectives of an Aboriginal cultural heritage place (Australian Heritage Commission and CRC for Sustainable Tourism 2001).

Jedbinbilla

Jedbinbilla (Block 60) is a transitional landscape. The former pine plantation was destroyed in the 2003 bushfire and the area is now regenerating to native tree cover. The comprehensive Aboriginal archaeological survey undertaken of Jedbinbilla following the fire recorded a large number of sites, the characteristics of which are consistent with Aboriginal use and occupation of the area on a daily basis over a long period. The name 'Jedbinbilla', recently given to this particular area, is recognised as one of a number of English written variations of the former Aboriginal term for either the Tidbinbilla Range or the Tidbinbilla area as a whole. While the term 'Jedbinbilla' or 'Jebbenbilla' has been suggested as formerly applying to Tidbinbilla Mountain as a place of initiation for young males (Flint 1983); the recent naming of Block 60 as 'Jedbinbilla' bears no specific relationship to the earlier ascribed meaning of the term.

The key management issues for the area are: (a) the rehabilitation of the former plantation to native vegetation cover; (b) the protection of Aboriginal cultural heritage; and (c) the provision of controlled recreational and other access.

The following considerations provide the basis for a policy framework for managing access to Jedbinbilla and gaining further knowledge of the cultural heritage values of the area:

- Further archaeological survey and research should be undertaken and/or supported, especially of the rock shelters, to document the scientific and social values of the area.

- Ongoing consultation with local Aboriginal people should be maintained regarding the management of heritage sites and public access.
- Public vehicle access is inappropriate (except for approved purposes including access to Nil Desperandum (see Table 5.2)).
- Access is appropriate for walkers and for bicycle riders, the latter on vehicle management trails only (former forestry roads).
- Public access to any significant Aboriginal cultural heritage sites in Jedbinbilla should be considered in the context of the strategic framework referred to above. If access is provided, a high standard protective management arrangement should be established. Access infrastructure should include:
 - boardwalks
 - protective railings, screens and other measures to prevent uncontrolled access into rock shelters
 - suitable drainage (from built structures and to control water flow through the interior of the sites)
 - high quality interpretation materials.
- It would be desirable to develop a program of guided interpretive walks in the area with the interpretation to be conducted by local Aboriginal people.

European Cultural Heritage

The main focus of management at Tidbinbilla has been on natural values (ACT Government 1999a). However, there is an increasing recognition that the stories and evidence of earlier lifestyles and their continuing links with the community are an important part of our cultural heritage. As well as a history of farming linked to the wider region; forest based industry, reservation, and faunal studies also occurred at Tidbinbilla prior to the declaration of the reserve in the 1960s. The intensity and range of past uses was related to local topography, presence of natural resources, and economic and social factors. Over time, many of the remnants of this past use have been lost through vegetation regrowth, bushfire damage, management policies and a new layer of uses and access routes. The following considerations and issues are pertinent to management:

- European cultural heritage values have statutory recognition (ACT Heritage Register, National Heritage List (through the listing of Tidbinbilla Nature Reserve)). Management of European cultural heritage should conform to the statutory requirements for those registers.
- For both the ACT Heritage Register and the National Heritage List, a conservation management plan is recognised as the appropriate basis for management of significant heritage places.
- The former Nil Desperandum residence and Rock Valley homestead are currently the main focus for the interpretation of European cultural heritage. There is the opportunity for wider interpretation of the cultural heritage of the area, for example: (a) the small scale eucalyptus distilling operations which are now uncommon in Australian forests; (b) the Hurdle Creek koala enclosure which was established in 1939 for the purpose of reintroducing a breeding population of koalas to the ACT.
- The fabric of cultural heritage places is fragile, vulnerable, and expensive to maintain, and the resources for maintenance are limited. There is the opportunity to use the skills, knowledge and volunteer labour of community groups to assist with the conservation of heritage places.
- Recreational and tourism use of some heritage places has the potential to alter, damage or even destroy them. Access needs to be planned to ensure that it is appropriate to the significance of the place and its conservation requirements.
- Adaptive reuse of historic buildings needs to consider the implications for heritage values, management, and equity issues related to community access.

- It is important to involve those people and organisations that have a special interest in the protection and conservation of cultural heritage at Tidbinbilla in the management of cultural heritage places.
- Guidance for the conservation and management of places of cultural significance (cultural heritage places) is provided by the Burra Charter. The charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance including owners, managers and custodians. The charter is revised from time to time and only the latest version is the approved Burra Charter (Australia ICOMOS 1999). Other useful guidelines include those by prepared by the Australian Heritage Commission (2000) and Lennon and Mathews (1996).
- There is potential for further historical research to be undertaken at Tidbinbilla.

Nil Desperandum Pisé House

Nil Desperandum is located in a sheltered grassy clearing north of Jedbinbilla, near the north-west boundary of Tidbinbilla Station and close to Hurdle Creek. It is a three-roomed rammed earth house built in 1892 for Henry Ffrench Gillman on a small portion (Portion 31, Parish of Booroomba and Congwarra) (Bulbeck and Boot 1991). The house was privately occupied until 1991. The building was extensively damaged in the 2003 bushfire but has been rebuilt. The building is sometimes incorrectly referred to as a 'homestead'. It has never been a farmhouse surrounded by a rural property, or an owner/manager's residence on a pastoral property.

Nil Desperandum was occasionally hired out following its inclusion in Tidbinbilla Nature Reserve in 1991. Now that the house has been rebuilt, there is the opportunity to make it available for short term hire. There is also the potential to use it for special activities such as an 'artist in residence' program or as a base for volunteer work in the Jedbinbilla area. Use of the house and its surrounds should be in accordance with a conservation management plan for the building and its surrounds.

The house in its picturesque location is likely to be of wider interest than only to those who hire it. It would be appropriate, therefore, to include it in a loop walk in Jedbinbilla. A program of visits and interpretation could also be established around regular, publicised open days for which a fee may be charged.

Rock Valley Homestead

Rock Valley homestead is located off Tidbinbilla Road between Turkey Hill and the commencement of the Ring Road around the Sanctuary. The first pisé and timber building at Rock Valley was occupied in 1895 and subsequently became part of a large complex of farm buildings. The property was held by the Green family for 68 years (1895-1963). Following inclusion in Tidbinbilla Nature Reserve all the buildings, except the house, were demolished. The building was badly damaged in the 2003 bushfire, but has been stabilised and re-roofed.

Rock Valley is the most conspicuous link to the former rural landscape of the Tidbinbilla Valley. The long association of the homestead with rural pursuits in the valley combined with its central location and easy access make it an ideal location to focus interpretation of the European pastoral period.

The following considerations provide the basis for a policy framework for managing Rock Valley homestead:

- Rock Valley provides a focal point for interpretation of the European cultural heritage of Tidbinbilla and could be used as a basis for more comprehensive cultural heritage interpretation program e.g. establishment of a cultural heritage trail.
- Future use of the homestead should be framed within a conservation management plan for the site.
- The Tidbinbilla Pioneers Association currently focuses most of its efforts at Rock Valley. The association and other community groups, through their knowledge and support, can play an important role in promoting and interpreting the cultural heritage of the site.
- There is an opportunity for further interpretation of the site and the possible re-establishment of some of the garden and orchard.

7.8 Objectives, Policies and Actions: Cultural Heritage

Objectives, policies and actions for cultural heritage are considered in the following categories:

- Statutory Compliance and Best Practice
- Aboriginal Cultural Heritage Values
- European Cultural Heritage Values
- Protection of Cultural Heritage Values
- Sustainable Cultural Heritage Recreation and Tourism
- Promotion of Cultural Heritage Research
- Enhancement of Staff and Volunteer Skills and Knowledge

STATUTORY COMPLIANCE AND BEST PRACTICE

OBJECTIVE

- **Cultural heritage values at Tidbinbilla are protected and conserved in accordance with statutory requirements and accepted best practice for cultural heritage conservation.**

POLICIES

- Cultural heritage values in Tidbinbilla will be managed in accordance with:
 - relevant legislative and planning frameworks
 - the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (Burra Charter) and its guidelines (the version of the charter that is current at the time works or other actions are proposed (see s. 7.7)).
- Management of cultural heritage values in Tidbinbilla will take account of:
 - National Heritage management principles
 - guidelines developed for the Australian Alps national parks, and for Aboriginal and European cultural heritage places in Australia
 - advice from the ACT Heritage Council, other heritage professionals, and community organisations with an interest and expertise in the management of cultural heritage places.

ACTION

- Prepare or update conservation management plans for Aboriginal and European cultural heritage and significant cultural heritage places as the primary basis for their ongoing management. These plans are to include statutory requirements and relevant principles, policies and guidelines.

ABORIGINAL CULTURAL HERITAGE VALUES**OBJECTIVE**

- **Aboriginal cultural heritage values are recognised, identified, protected, incorporated into the management of Tidbinbilla, and interpreted where appropriate, taking account of cultural sensitivity and ongoing connection of Aboriginal people to their Country.**

POLICIES

- Aboriginal cultural heritage will be managed in accordance with statutory requirements, National Heritage principles, and guidelines for Aboriginal cultural heritage places.
- A strategic approach to the interpretation of Aboriginal cultural heritage at Tidbinbilla will be adopted, involving an inventory of all sites, knowledge about them and their significance. This provides a context for decisions about access and interpretation within a broader cultural landscape context.
- Research into Aboriginal cultural heritage at Tidbinbilla will be encouraged and supported.
- Aboriginal cultural heritage values at Tidbinbilla will be interpreted in a way that promotes community understanding and appreciation of those values and recognition of the connection of Aboriginal people to their Country.
- The right of the Ngunnawal community to be involved in determining the content of educational, display and interpretive material at Tidbinbilla will be respected.
- Interpretation of Aboriginal cultural heritage at Tidbinbilla will be undertaken by Ngunnawal people.
- The Ngunnawal community and other Aboriginal groups in the region will be consulted regarding any proposed management actions that have the potential to impact on Aboriginal cultural heritage values at Tidbinbilla.

ACTIONS

- Undertake an archaeological study to determine the characteristics and significance of the rock shelters at Jedbinbilla.
- Prepare a comprehensive assessment of Aboriginal cultural heritage at Tidbinbilla to provide the basis for a strategic approach to the interpretation of Aboriginal cultural heritage by Aboriginal people.
- Identify and document traditional Aboriginal ecological knowledge and, where appropriate, use it in reserve management through partnerships with Aboriginal people.
- Develop an interpretation program for Aboriginal cultural heritage at Tidbinbilla by Aboriginal people and promote this to visitors.
- Develop a strategy to establish the interpretation of Aboriginal cultural heritage at Tidbinbilla by Ngunnawal people.
- Explore the development of protocols with the Ngunnawal community for access to Tidbinbilla by Aboriginal people for cultural purposes that address:
 - access (including vehicle use)
 - potential establishment of Aboriginal cultural camps
 - hunting of animals and gathering of plants by Aboriginal people as part of cultural camps.

(Note: If developed these protocols will address issues of public safety and the potential impact of Aboriginal use on non-Aboriginal park users, threatened species, catchment health and other park values, including the heritage values of known Aboriginal places. The protocols will not permit the use of firearms within Tidbinbilla or the sale of plants, animals or other products collected as part of cultural camps. In general, activities permitted under protocols are to be in accordance with the objectives and policies in this management plan.)

EUROPEAN CULTURAL HERITAGE VALUES

OBJECTIVE

- **European cultural heritage values are recognised, identified, protected, incorporated into the management of Tidbinbilla, and interpreted to visitors.**

POLICIES

- European cultural heritage will be managed in accordance with statutory requirements, National Heritage principles, and guidelines for European cultural heritage places (including the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (Burra Charter) and its guidelines).
- European cultural heritage values at Tidbinbilla will be interpreted in a way that promotes community understanding and appreciation of those values.
- Research into European cultural heritage at Tidbinbilla will be encouraged and supported.
- Community attachment to the Tidbinbilla area, including significant cultural heritage places, will be recognised and the community will be encouraged to participate in heritage management and interpretation.
- Interpretation of the history of the Tidbinbilla area prior to its reservation in the 1960s will include the range of activities undertaken there (e.g. farming, forest industries, faunal studies) and subsequent landscape effects.

ACTIONS

- Prepare a comprehensive assessment of European cultural heritage at Tidbinbilla to provide the basis for an interpretation program.
- Include the range of previous land uses and activities (e.g. forest based industry, faunal studies) in the interpretation of European cultural heritage.
- Investigate the feasibility of establishing interpretive displays to inform visitors about the nature and significance of previous uses and activities (e.g. a display or re-creation of the eucalyptus oil distilling process and its environmental impact, incorporating relict material such as the boilers).
- Evaluate the feasibility of establishing a 'heritage trail', mostly accessible by foot or bicycle, using Rock Valley homestead as a focal point.
- Develop an interpretation program for European cultural heritage at Tidbinbilla and promote this to visitors.

PROTECTION OF CULTURAL HERITAGE VALUES

OBJECTIVE

- **Cultural heritage values at Tidbinbilla are protected through strategic planning that is integrated with other management objectives.**

POLICIES

- Assessment of relative levels of significance will be one of the guides to management of cultural heritage values at Tidbinbilla and the resolution of conflicts between the protection of cultural, natural, recreational and other values.
- Cultural heritage values will be assessed and considered when making land management decisions.
- The provision of public access to significant cultural heritage places at Tidbinbilla will take into account:
 - the cultural sensitivity of the place (especially Aboriginal heritage)
 - the risk to public safety
 - the risk of accidental or unintentional damage to the fabric of the place
 - the risk of vandalism.
- Measures will be put in place to protect significant Aboriginal and European cultural heritage sites that are made accessible to the public.

ACTIONS

- Conserve cultural heritage places, historic buildings, archaeological sites, stabilised ruins, non-invasive exotic plant species of cultural significance, and portable heritage objects. Achieve this through maintenance, stabilisation, restoration, reconstruction and adaptation, as defined in the Burra Charter, and based on conservation planning, studies, and professional advice.
- Leave portable Aboriginal and European heritage objects *in situ* unless there is a demonstrated need to remove them for conservation and/or curatorial purposes or where there is an unacceptable risk of loss through theft, vandalism or other actions. Removal of any objects is to be carried out in accordance with the provisions of the *Heritage Act 2004*.

SUSTAINABLE CULTURAL HERITAGE RECREATION AND TOURISM**OBJECTIVE**

- **Tidbinbilla provides opportunities to visit cultural heritage places and learn about their history and significance in a way that is compatible with their conservation.**

POLICIES

- The establishment of cultural tourism activities and ventures will be encouraged and supported where these are compatible with the conservation of cultural heritage places.
- Recreation and tourism activities will be planned carefully so that they are appropriate to the significance of a place. They may not be appropriate for a particular heritage site where they are incompatible with the significance of the place, management objectives, or cultural sensitivity.

ACTIONS

- Promote the Aboriginal and European cultural heritage of Tidbinbilla in information about the reserve; including its significance and conservation requirements, and appropriate visitor behaviour.
- Investigate providing controlled access, including construction of a walking track, to Aboriginal cultural heritage sites in Jedbinbilla following the completion of an archaeological study and in consultation with the Ngunnawal community.
- Develop visitor arrangements for Nil Desperandum including walking and cycling access, regular open days, and short-term hire of the house.
- Establish protocols for visits to cultural heritage places by tourism operators.

PROMOTION OF CULTURAL HERITAGE RESEARCH**OBJECTIVE**

- **Research makes an important contribution to the identification, conservation and management of the cultural heritage values of Tidbinbilla.**

POLICIES

- Research into the human occupation and land use of the Tidbinbilla area will be supported and facilitated, especially where this is likely to assist in the conservation of cultural heritage values. This research may include:
 - archaeology (including dating and other information about important occupation sites)
 - Aboriginal culture (including but not restricted to stories, social customs, use and management of natural resources)
 - European history
 - the place of Tidbinbilla in the scientific study of the Australian Alps and montane areas
 - oral histories of people with a connection or attachment to Tidbinbilla.

ACTIONS

- Encourage and support research into the cultural heritage of Tidbinbilla.
- Incorporate the results of cultural heritage research into the management of Tidbinbilla and into education and interpretation programs.

ENHANCEMENT OF STAFF AND VOLUNTEER SKILLS AND KNOWLEDGE

OBJECTIVE

- **Staff and volunteers have the skills and knowledge to manage and interpret cultural heritage places at Tidbinbilla and to protect their values.**

POLICIES

- Opportunities will be provided for staff and volunteers to undertake professional development in the field of cultural heritage conservation and management and cross-cultural awareness.
- Opportunities will be pursued for Ngunnawal and other Aboriginal people to take a significant role in the management and interpretation of Aboriginal cultural heritage.

ACTIONS

- Ensure that staff and volunteers working with Aboriginal people and involved with Aboriginal cultural heritage are provided with the opportunity to undertake cross-cultural awareness training.
- Develop and maintain a training program for staff and volunteers to ensure a high professional standard in the management and interpretation of cultural heritage.
- Support a training, employment and career development program for Ngunnawal and other Aboriginal people aimed at assisting them to participate in the management of Tidbinbilla and interpretation of its Aboriginal cultural heritage.



Tidbinbilla is ideally suited to being the more intensively used corner of the greater Namadgi National Park. Namadgi has the capacity to cater for true wilderness experiences, while Tidbinbilla caters for car-based visitors and picnickers who wish to experience the outdoors.

Shaping Our Territory. Tidbinbilla Nature Reserve: Business Case and Master Plan (2004)

8.1 Primary Management Objectives

- **Tidbinbilla provides a variety of recreation opportunities that are consistent with the protection of the area's natural and cultural heritage values.**
- **Tidbinbilla makes a significant contribution to the spectrum of nature based tourism opportunities in the ACT and region and informs visitors about those opportunities.**

8.2 Background

The proximity of Tidbinbilla Nature Reserve to the Canberra urban area, the visitor facilities provided, and the opportunity to see Australian wildlife have resulted in a high level of use for outdoor recreation and social gatherings in a natural setting. The reserve is popular for families with young children, with the main attractions being the wildlife enclosures, barbecue and picnic facilities, and bushwalking opportunities. The reserve is a popular place to introduce visitors to the Australian bush, to view wildlife and to visit Aboriginal and European cultural heritage places. In the 1990s, TNR was also identified as a focal point for the promotion of tourism, especially nature based tourism (see **Glossary**), in the ACT. The reserve was included in various ACT-wide strategies and studies aimed at bringing more tourists to the territory and increasing the attractiveness of popular destinations.

Significant investment in visitor infrastructure has been undertaken at Tidbinbilla in the reconstruction following the 2003 bushfire. The integration of Birrigai, Jedbinbilla and Gibraltar into the Tidbinbilla precinct creates new opportunities and challenges with regard to the provision of visitor facilities and the management of visitor use. In 2008, Canberra residents comprised 56 per cent of visitors, 20 per cent were from interstate (including 5 percent from Queanbeyan), and 24 per cent from overseas. These percentages accord with pre-fire data. The most popular reasons for visiting were for a picnic or barbecue, to visit the Sanctuary or Playground, or for bushwalking, bird watching or animal viewing (MARS 2008). TNR is the most popular location in the ACT for residents to take visitors to see kangaroos (Micromex 2008). There was a high level of visitor satisfaction with the 'experience' provided by Tidbinbilla Nature Reserve.

Role of Tidbinbilla

Tidbinbilla is part of a diversity of outdoor recreation areas in the ACT that range from the highly urbanised and easily accessible, to the remote, rugged and largely inaccessible. This spectrum commences with the urban parks and lakes; includes Canberra Nature Park, current and former pine plantation areas, the Murrumbidgee River Corridor, and Tidbinbilla; while the wilderness area of Namadgi National Park is at the other end of the scale. It is evident from this range that not all recreational opportunities can be offered in a particular park or reserve but may be found in other areas within the system. Tidbinbilla is a developed recreation area with facilities and attractions that distinguish it from other reserved areas. These are the wildlife enclosures, children's playground, developed nature interpretation facility (the Sanctuary), Visitor Information Centre, and built outdoor education and recreation infrastructure and accommodation facilities at Birrigai at Tidbinbilla. The attractiveness of Tidbinbilla Nature Reserve to overseas and interstate tourists is another point of difference based on its accessibility, wildlife viewing opportunities, and developed picnic and barbecue facilities in a natural setting.

8.3 Management Considerations and Issues

With regard to recreation and tourism, the management plan for Tidbinbilla has to consider existing attractions and activities, take account of those proposed for the future, and ensure the protection of natural and cultural heritage values. Established uses and proposals for the future raise the following considerations and issues for management:

- **Recreation activities:** The types of activities permitted at Tidbinbilla need to take into account the protection of natural and cultural heritage, the suitability of the area, ongoing management requirements, the compatibility of different activities, the ability to undertake the activity elsewhere, safety, and the balance between low key passive and more active uses. Recent visitor data indicates the importance of natural and semi-natural settings in attracting visitors. Substantial funds and staff time are devoted to maintaining visitor facilities.
- **Numbers of visitors:** Rebuilding of facilities and ongoing recovery of the landscape after the 2003 bushfire have seen visitor numbers re-establish at Tidbinbilla. Visitor numbers in the Tidbinbilla Valley are generally low during weekdays, rising in school holiday periods. There is the potential to increase these numbers without unacceptable environmental and social impacts (see **Glossary**). However, the types and locations of activities undertaken by visitors and the numbers of visitors are important considerations for management.
- **Tourism potential:** Tidbinbilla is an important outdoor destination for visitors to the ACT and it is intended to further promote and develop the tourism potential of the area. This has important management implications in relation to how the area is marketed, the activities that are promoted and undertaken, the facilities provided and their ongoing servicing and maintenance requirements, and the sustainable level of visitor numbers. Tourist development proposals should be based on a sound business case. Tidbinbilla has an established profile and is held in high regard as a place to see wildlife in natural surroundings (both free ranging and captive). For many people, Tidbinbilla has accessible wildlife and the opportunity to experience the Australian bush in an easily accessible, well-serviced setting compared with more distant park locations.
- **Services:** The provision of services at Tidbinbilla is a significant issue as the precinct has limited electronic communications, water supply is from a bore, and sewage systems must be on-site.
- **Charging of fees:** An entry fee was re-introduced at Tidbinbilla on 1 August 2009. There is the opportunity to charge fees for specific or special interpretive activities such as guided walks and open days at cultural heritage sites.
- **Birrigai at Tidbinbilla:** The role that the accommodation and associated facilities at Birrigai at Tidbinbilla could play in expanding environmental education, recreation and tourism is being examined.
- **Environmental education:** Building the links between environmental education and recreational visits to Tidbinbilla is an important focus for management. This means pursuing opportunities to enhance the experience of people who come to Tidbinbilla by encouraging them to take advantage of the interpretive and educational materials and activities that are currently available and that will be developed in the future. There may also be opportunities for special activities that involve a higher level of interpretation. Fees may be charged for such activities.
- **Cultural heritage places:** Determining appropriate levels and types of visits and interpretation of Aboriginal and European cultural heritage places is important (s. 7.7). Opening areas to visitors needs to be planned so that it is appropriate to the significance of the place and takes account of cultural sensitivity in the case of Aboriginal heritage.
- **Partnerships:** Partnerships with private enterprise in the provision of recreational/tourism facilities and activities have been developed in other protected areas and may be developed for Tidbinbilla. Tidbinbilla is one of a number of destinations on Tourist Route 5 and links should be continued with other places on this route to maintain its profile. Recreation and

tourism proposals may be developed during the life of this management plan that are beyond the boundaries of Tidbinbilla but could potentially involve and be advantageous to Tidbinbilla. The objectives and policies of the plan provide a foundation for the involvement of Tidbinbilla in such proposals.

- **Overnight stays:** Tidbinbilla Nature Reserve has always operated as a day use area. Though the idea of overnight camping or cabin accommodation has been raised over many years, but due to management (including security), infrastructural and, most likely, economic reasons, overnight stays have not been permitted. This management plan recognises the tourism opportunities that may be associated with permitting overnight accommodation within Tidbinbilla. Birrigai at Tidbinbilla provides accommodation for both school and non-school groups, having both dormitory and unit accommodation. There is also the opportunity for tent camping in association with outdoor/education programs. Formal arrangements for the short term hire of Nil Desperandum house are included in this management plan (s. 7.7, s. 7.8, s. 8.10).
- **Attractions:** The extent to which more 'attractions' should be built is fundamental to the directions for Tidbinbilla. It is evident from visitor surveys that the natural environment, wildlife viewing, and opportunities for recreation in a natural setting are important reasons for visiting Tidbinbilla. The wildlife collection is a long-standing attraction at Tidbinbilla. The Sanctuary and Nature Discovery Playground are popular with visitors and the Ribbon Gum Theatre is used for special events. There is an ongoing program to establish and upgrade walking tracks some of which feature prominent landmarks.
- **Visitor Information Centre:** The Visitor Information Centre at the entrance to Tidbinbilla Nature Reserve serves a number of functions including visitor information and orientation, fee collection, education and interpretation, and sale of merchandise. While information, orientation, advice on activities, and fee collection need to remain at the entrance, some of the other functions could be relocated to an education centre should one be established (s. 9.4).
- **Entrance to the precinct:** Tidbinbilla Nature Reserve and Birrigai have separate entrances. The Birrigai entrance has poor visibility and its relocation is desirable to improve safety.

8.4 Managing Visitor Impacts

Managing visitor impacts has received much attention in protected area management. There are four key elements in a coordinated approach to this: planning to avoid impacts; active management of sites; monitoring and reporting; and a rapid response to unsustainable actions (Worboys et al. 2005). All visitor use at Tidbinbilla has the potential to result in environmental and social impacts. Important questions for management are how such potential impacts can be avoided or minimised and what level of impact is acceptable to managers, visitors and the wider community. A growing issue for reserves near urban areas is anti-social behaviour (e.g. vandalism, littering, drag racing and off-road vehicle driving). For Tidbinbilla, closing access at night is important for the security of its high value or vulnerable features, such as recreational infrastructure and wildlife collections.

Away from the developed facilities in the valley floor, visitors would generally expect a natural bush setting with few management intrusions. This can only be achieved while disturbance of natural areas by visitors themselves remains low. Recreational activities at Tidbinbilla should complement the natural setting of the area and avoid or minimise detrimental impacts on natural and cultural heritage values. The aim is to stop degradation before it reaches unacceptable levels and to use knowledge of potential impacts to plan for visits in a way that avoids or minimises impacts.

VISITOR IMPACTS**OBJECTIVE**

- **Visitor impacts are managed so that natural and cultural heritage values are protected while visitor enjoyment is maintained.**

POLICIES

- Suitable measures will be put in place to avoid or minimise potential visitor impacts and to address those already occurring.
- Recreation management in Tidbinbilla will be informed by monitoring.

ACTIONS

- Manage recreational activities at Tidbinbilla to minimise impact on natural and cultural heritage values by careful siting of tracks and facilities, protective measures, visitor education, promotion of minimal impact codes (e.g. Australian Alps codes), and liaison with user groups.
- Develop monitoring programs to assess visitor impacts, especially in areas with significant natural and/or cultural heritage values.

8.5 Managing Visitor Safety

There is some level of risk associated with all recreational activities. Risk is not an absolute in itself, as the competency of those undertaking the activity is a significant factor in mitigating the risk. Outdoor pursuits sometimes require critical judgements to be made, which are based on a combination of skills, knowledge and experience.

The duty of Tidbinbilla management is to identify foreseeable risks and take reasonable steps to reduce them, particularly for people who may not have the skills, knowledge or experience to recognise the risk or the magnitude of the risk. However, managers cannot take complete responsibility for the safety of participants who visit Tidbinbilla. Particular considerations are the prevalence of family groups (often with young children), school children, and people with limited experience of the Australian bush.

VISITOR SAFETY**OBJECTIVES**

- **Visitors to Tidbinbilla are adequately advised of and, where necessary, safeguarded from known hazards present in the reserve.**
- **All visitor facilities are developed to a safe standard and management activities are undertaken in a way that minimises the risk to visitors.**

POLICIES

- Risks to Tidbinbilla visitors will be managed in a way that conforms to duty of care requirements, considers the risks for children, adequately informs visitors of known hazards, and if necessary protects visitors from hazards.
- Visitor facilities will be designed, built and maintained to relevant standards and guidelines including for access by people with disabilities.
- An emergency response plan and capability will be maintained for Tidbinbilla in relation to emergency situations and threats to public safety.

ACTIONS

- Maintain and update as required an emergency response plan for Tidbinbilla, in conjunction with the Australian Federal Police, the Emergency Services Agency and other organisations.
- Ensure that all facilities at Tidbinbilla are designed and built to relevant standards and to minimise risks to visitors.
- For Birrigai at Tidbinbilla, ensure that staff regularly update the risk assessments of key activities and are trained appropriately to deliver high risk activities.
- Provide clear descriptive and safety information to visitors about the designated walks in Tidbinbilla.
- Ensure that visitors are adequately warned about potential hazards (e.g. herbicide spraying, European wasps).

8.6 Communication

Communication in all its forms is an important component of the management of Tidbinbilla and an effective communication program is vital to achieving the objectives of this management plan. Communication includes marketing and promotion, information materials, interpretation, education, community involvement, visitor feedback, and liaison and consultation with stakeholder groups. Communication involves activities and materials both at Tidbinbilla and elsewhere. The internet is now a major source of information and exchange of ideas and impressions about protected areas such as Tidbinbilla (Tourism Research Australia 2009). The importance of online information for tourism has been recognised in the ACT (Australian Capital Tourism 2008).

Communication objectives can be divided into two broad groups: the first involves knowledge and appreciation; the second is behavioural (DEC Western Australia 2007).

Knowledge and appreciation objectives relate to:

- awareness of the existence of Tidbinbilla as a place to visit
- opportunities for active and passive recreation and the facilities provided
- opportunities for wildlife viewing and learning about Australian bushland, plants and animals
- opportunities to experience and learn about the long period of Aboriginal use of the area and the period of European settlement prior to declaration of Tidbinbilla Nature Reserve
- increased awareness, appreciation and understanding of how the area is managed and the reasons for the management policies that are in place.

Behavioural objectives relate to:

- increased community involvement and 'ownership' of Tidbinbilla
- engendering respect for the values of Tidbinbilla and support for their ongoing protection
- increased responsibility: acting in a way that reduces impact on the values of Tidbinbilla, thereby contributing to the protection of the natural and cultural heritage of the area
- provision of environmental education that contributes to recognition and support for environmentally responsible actions elsewhere.

Marketing and Promotion

A marketing strategy is an important part of the communication about Tidbinbilla, as marketing and promotion are essential for the development of the tourism and educational potential of the precinct. This forms part of the business planning for the area. Given the reserve status of Tidbinbilla and the results of a visitor survey in 2008 (MARS 2008), a commencing point for a marketing strategy is the importance to visitors of the natural environment and recreational opportunities associated with the natural environment. Key features of Tidbinbilla for a marketing strategy include:

- the ability to see some characteristic Australian wildlife in natural settings
- facilities designed to encourage use by family groups and children
- the high quality educational and recreational experience offered by the Sanctuary, enhanced by the presence of volunteer guides
- the educational and recreational opportunities and associated accommodation provided by Birrigai at Tidbinbilla
- opportunities to gain a greater understanding of cultural heritage and to increase cultural awareness
- opportunities for more strenuous recreational activities within a relatively safe environment (e.g. a developed track/trail network)

- the potential for overnight stays in the precinct and activities that may be undertaken in association with such stays
- the place of Tidbinbilla in the network of Australian Alps national parks.

COMMUNICATION

OBJECTIVE

- **High quality communication about Tidbinbilla, including its natural and cultural values, management arrangements, visitor facilities, and recreational and educational opportunities, is provided for the community, visitors, the education sector and other stakeholders.**

POLICIES

- A communication program will be developed for Tidbinbilla that introduces and promotes Tidbinbilla as a high quality education, conservation, recreation and tourism destination.
- A marketing strategy will be developed for Tidbinbilla promoting the attractions of the precinct including its recreational and educational opportunities.
- The full range of information and communication technologies will be used as a basis for communication about Tidbinbilla, and interaction with the community, visitors and stakeholders.

ACTIONS

- Develop and maintain a communication program that introduces and promotes Tidbinbilla as a high quality conservation, education, recreation and tourism destination.
- Develop a marketing strategy for Tidbinbilla that strategically targets potential visitors including overseas and interstate tourists, and potential users of the facilities of Birrigai at Tidbinbilla.
- Explore the use of the full range of information and communication technologies for the communication program and marketing strategy.
- Seek partnerships with other government agencies, commercial organisations, community groups, and volunteer organisations to communicate and market the conservation values and recreational and educational opportunities of Tidbinbilla.

8.7 Nature Based Tourism

Tourism is important to the ACT economy in relation to visitor expenditure, local employment, and for its contribution to developing a positive image of Canberra (Australian Capital Tourism 2009). The potential for the development in the ACT of the nature based tourism component has been widely canvassed over the last two decades; however, this profile remains relatively weak. There is the opportunity for Tidbinbilla to develop further its nature based tourism potential, which includes cultural heritage places in 'natural settings'. The Australian Alps national parks, of which Tidbinbilla is part, are included in Tourism Australia's National Landscapes Program launched in 2008. This is aimed at attracting people seeking adventure, experiencing outstanding environments, and engaging with local culture (see <http://www.australia.com>). In the Alps and ACT contexts, the following considerations and issues are relevant to nature based tourism at Tidbinbilla:

- **Accessible nature:** Tidbinbilla offers the opportunity to experience the Australian bush with a range of well-maintained but low-key facilities within easy access from Canberra. There are opportunities to see both wild and captive animals (in natural enclosures), diverse vegetation communities and rare plants, spectacular rock formations, and uncommon environments in the ACT such as wet forest gullies.
- **Aboriginal cultural heritage:** Observation and interpretation of Aboriginal cultural heritage is an important experience for many domestic and international tourists. There is the opportunity for Tidbinbilla to develop a high quality program for the interpretation of this heritage.

- **European cultural heritage:** Tidbinbilla contains remnants of the rural economy and society that predated the reserve. Cultural heritage places provide the opportunity to foster historical understanding of the Tidbinbilla landscape (in its tableland and montane context) and the people who lived there.
- **Recreation/adventure:** Tidbinbilla offers challenging day walks, shorter and easier walks and modest opportunities for adventure activities e.g. rock climbing and mountain bike riding. The accessibility and relative safety of outdoor activities at Tidbinbilla are worthy of promotion.
- **Education/interpretation:** Tidbinbilla offers education and interpretation of the natural environment, especially in the wildlife area based around the Sanctuary. This is an important tourism function.
- **Australian Alps:** Tidbinbilla is unable to offer some of the attractions of the greater Australian Alps e.g. scenic mountain driving (2WD) or extensive four-wheel drive touring, snow skiing or other snow based activities, extended overnight bushwalking.
- **Visitor Numbers:** Increasing the tourism profile and numbers visiting Tidbinbilla has implications for management, which has to ensure that tourism growth does not adversely impact on the natural and cultural values of the area or result in conflicts between different types of recreational activities.

Commercial Recreation and Tourism

Commercial recreation and tourism activities are those undertaken by organisations, businesses or individuals that charge a fee for services or products. Currently, there are few nature-based tourism operators in the ACT and Tidbinbilla has not been an important destination for such operators.

The only recreational activities that will be approved for commercial operators are those that are permitted generally. Conditional special access privileges (e.g. vehicle access to otherwise closed management trails) may be granted to service approved outdoor education, tourism and recreational activities. Such access would be in accordance with current policies for commercial operators in areas managed by the ACT Government, with potential impacts managed through a permit or licensing system. Under this, management principles would be agreed with commercial operators, formalised and monitored. Walks and other non-vehicle based commercial activities would also require a permit from Tidbinbilla management.

Special access rights to defined management trails by commercial operators would require the written consent of the Conservator (s. 67 of the *Nature Conservation Act 1980*).

NATURE BASED TOURISM

OBJECTIVES

- **Tidbinbilla is a high quality, sustainably managed, nature based tourism destination providing an attractive range of recreational and educational opportunities to Australian and international tourists.**
- **Commercial recreation and tourism activities make an important contribution to nature based tourism at Tidbinbilla.**

POLICIES

- The promotion of Tidbinbilla as a nature based tourism destination will be enhanced in tourism marketing for the ACT.
- A commercial tour operator will be required to prepare an environmental management plan for a proposed operation at Tidbinbilla. The content of such a plan will depend upon the type of operation and its potential environmental and social impact.
- Issue of licences to commercial tour operators will address the following criteria:
 - size of commercial groups in relation to areas proposed to be visited and the activities to be undertaken
 - frequency of visits
 - the potential for impacts taking into account current usage and impacts on the area(s) to be visited
 - potential impacts on other visitors, including exclusion of visitors as the result of commercial tours
 - protocols for communication with the public
 - level of knowledge, professional training and indemnity of the operator
 - accreditation of the operator e.g. Ecotourism Australia Accreditation
 - submission of trip plans and emergency evacuation procedures in case of emergency
 - safety of participants and other visitors
 - concordance of the proposed operation with the objectives and policies of this management plan.
- Special access rights to defined management trails by commercial operators require the written consent of the Conservator.
- Fees for commercial operators will be determined and reviewed in accordance with ACT Government policy.
- Proposals for development of tourism facilities (including accommodation options for overnight stays) and activities will be assessed against the management objectives and policies in this management plan; their ability to complement existing facilities and opportunities both within Tidbinbilla and the surrounding area; their potential environmental impact; and their likely economic viability and value to the ACT community.

ACTIONS

- Include nature based tourism opportunities in the communication program and marketing strategy developed for Tidbinbilla (s. 8.6).
- Encourage tourism operators to include Tidbinbilla in their programs and provide advice to such operators on the values of Tidbinbilla, management of the precinct, and recreational, educational and accommodation opportunities and options.
- Design and operate facilities at Tidbinbilla so that they are welcoming to tourists.
- Seek partnerships with other government agencies, commercial organisations, community groups, and volunteer organisations to promote and develop tourism opportunities at Tidbinbilla.
- Work with the managers of other attractions on Tourist Drive 5 to maintain the profile of the drive and to encourage its use by visitors to the ACT.
- Grant licences or permits to commercial recreation and tourism operators, where their proposed operations accord with the management objectives for Tidbinbilla, and subject to the policies outlined above.

8.8 Recreational Activities

This section contains policies and actions for specific recreational activities that are permitted in Tidbinbilla. It also refers to **public vehicle use on management trails** (permitted only in certain circumstances). Permitted and prohibited activities are listed in Table 8.1 in relation to the management zones in Tidbinbilla.

RECREATIONAL ACTIVITIES

OBJECTIVE

- **Opportunities for a range of recreational activities are provided in Tidbinbilla that accord with its natural setting, its quiet and peaceful atmosphere, its educative role, and the protection of its significant natural and cultural heritage values.**

(a) Walking

Tidbinbilla is available for day walks only and contains established walks of varying length and difficulty. Overnight bush camping is not permitted. Walks range from short, family oriented, high standard walks suited to a wide range of ages and abilities to long and strenuous walks on the perimeter ridgelines (Barrow 2009). A walks guide and map containing a list of short walks and longer walks is available at the Visitor Information Centre. The longer walks are generally along vehicle management trails and are signposted. Some walks undertaken by experienced individuals or bushwalking groups are not included in this information (e.g. Fishing Gap to Mt Domain).

POLICIES

- Walking is encouraged at Tidbinbilla on designated walking tracks and management trails and appropriate information and facilities will be provided.
- Walks in Tidbinbilla are day walks only, with no overnight bush camping.
- Walks in Tidbinbilla will provide for a range of abilities and some tracks will be suitable for wheelchairs and strollers.
- Walks in Tidbinbilla will be developed and maintained in accordance with relevant design standards and walks classifications.

ACTIONS

- Undertake a program of works to provide a network of walking tracks in Tidbinbilla that provide walking opportunities for people with a range of abilities.
- Maintain walks at Tidbinbilla according to their classification and in relation to levels of use.
- Develop information and interpretive material to promote walking in Tidbinbilla, to encourage tourists, and to enhance the safety of walkers and their experience of Tidbinbilla.
- Promote the Australian Alps National Parks Bushwalking Code to bushwalkers in Tidbinbilla.

(b) Cycling

Cycling is currently permitted on sealed roads and management trails, but is a minor activity at Tidbinbilla. Tourist Route 5 which passes Tidbinbilla is popular for road cyclists. Opportunities for mountain bike riding are more limited than areas in Namadgi National Park due to most vehicle management trails in the Tidbinbilla and Gibraltar ranges having very steep grades. Excellent facilities, including technical courses, are available at Stromlo.

POLICIES

- Cycling (mainly mountain bike riding) is permitted on vehicle management trails unless otherwise advised.
- Cycling is not permitted on walking tracks unless they are tracks constructed for both walking and cycling use.
- Specialised single track, downhill descent, or cross country competition tracks for mountain bikes will not be constructed in Tidbinbilla.

ACTIONS

- Investigate the potential and location for cycling routes in the Tidbinbilla precinct, in particular, those suited to family cycling.
- Promote the Australian Alps National Parks Cycling Code to bicycle riders in Tidbinbilla.

(c) Picnicking

Picnicking is a very popular recreational activity at Tidbinbilla and is often combined with a visit to the Sanctuary, wildlife viewing, short walks and visits to other points of interest, such as cultural heritage sites. The main focus for picnics and barbecues is the Nature Discovery Playground. Other sites with facilities are the nearby Webbs, Greens and Blewitts areas (adjacent to the Tidbinbilla River) and Flints Picnic Area.

POLICY

- Picnic and barbecue facilities will be provided and maintained at Tidbinbilla, especially those that cater for family and other groups of day-visitors.
- As far as practicable, facilities at picnic areas will provide access for people with disabilities.

ACTIONS

- Maintain designated picnic and barbecue facilities to a high standard.
- Provide information at picnic areas on recreational, educational and interpretive opportunities at Tidbinbilla.

(d) Scenic Driving 2WD

Scenic driving is confined to the sealed 2wd circuit (nine km long) at the head of the Tidbinbilla Valley passing the Sanctuary. There is a lookout on the southern side of this loop which provides a vista over the valley. Expansion of the road network is not envisaged.

POLICIES

- Scenic driving is permitted on public roads in Tidbinbilla.
- Public vehicle use on management trails for recreational purposes is not permitted in Tidbinbilla. (Vehicles may be permitted on closed management trails for specific authorised purposes, see Public Vehicle Use on Management Trails below).

(e) Rock Climbing and Abseiling

The main rock climbing sites in the ACT are in Namadgi National Park. There is a low level of rock climbing and abseiling at Tidbinbilla, mainly at Gibraltar Peak. Birrigai at Tidbinbilla offers guided rock climbing and abseiling to groups undertaking outdoor adventure programs. These activities are led by qualified instructors, and are compliant with the relevant current standards. At the time of preparing this management plan, this was the outdoor recreation training package under the Australian Qualifications Framework (Australian Qualifications Framework 2010). Full risk assessments and area files on designated climbing sites are maintained.

POLICIES

- Rock climbing and abseiling are permitted at Tidbinbilla except:
 - at significant Aboriginal cultural heritage sites
 - in Jedbinbilla
 - at sites where the activities conflict with management objectives.
- Should the need arise, a code of practice will be established with climbing groups that use the reserve.
- Organised rock climbing and abseiling activities run through Birrigai at Tidbinbilla will be:
 - guided by suitably qualified instructors holding current Outdoor Recreation Training Package certification in abseiling
 - undertaken at designated sites for which risk assessments and site documentation is maintained.

(f) Flying: Non-powered (e.g. hang gliding, paragliding, balloon flying)

Tidbinbilla lacks suitable sites for hang gliding and paragliding. Hot air balloons may be associated with special events.

POLICY

- Management permission is required for all types on non-powered flying at Tidbinbilla.

(g) Nature-based Activities including Wildlife Viewing and Bird Watching

Tidbinbilla has a history as a place for nature study including observations on the behaviour and song of superb lyrebirds (*Menura novaehollandiae*). Wildlife viewing is a popular activity especially in the Wildlife Precinct and in a less formalised way in other parts of the area.

POLICY

- Nature-based activities at Tidbinbilla will be encouraged and supported.

ACTIONS

- Provide information and interpretation to encourage and support nature-based activities at Tidbinbilla.
- Investigate the opportunities for further development of specialised wildlife tours, including night time tours (e.g. to observe nocturnal arboreal mammals).
- Provide opportunities and guidance for visitors to observe wildlife in natural, created and captive habitats (enclosures).

(h) Visiting Natural and Cultural Heritage Sites

Visiting natural and cultural heritage sites in the Tidbinbilla Valley has been provided for by the establishment of walks and interpretative material. These walks include the Xanthorrhoea Loop Trail, Gibraltar Peak Trail, Birrigai Time Trail and Hanging Rock Trail. There is scope to further develop these opportunities.

POLICY

- Visiting natural and cultural heritage sites is encouraged and appropriate facilities, interpretation and site protection will be provided.

ACTIONS

- Pursue opportunities to make the natural and cultural attributes of Tidbinbilla accessible to visitors while protecting the values of particular sites.
- Provide information and interpretation for natural and cultural heritage sites aimed at enriching the visitor experience and understanding.
- Monitor visitor impacts at important or sensitive sites and take remedial action if disturbance threatens to adversely affect the site.

(i) Geocaching

'Geocaching' is an internet organised adventure game based on a 'treasure hunt' theme where participants in one party use a handheld GPS device to search for sealed caches left by other parties. This may involve digging a hole and burying a container or use of rock shelters or other cultural heritage sites. Geocaching is not permitted in national parks in New South Wales.

POLICY

- Geocaching is only permitted at Tidbinbilla where it does not involve digging holes and burying objects, depositing objects in rock shelters or other cultural heritage sites, or littering (not collecting objects previously deposited). The use of Tidbinbilla for geocaching will be monitored and appropriate action taken if the activity has an impact on the values of the area.

(j) New Activities

Over the life of this plan, new recreational activities may emerge that have not been catered for or specifically considered. An example is 'geocaching' (above) which has emerged in the last ten years.

POLICIES

- In determining whether or not a recreational activity should be permitted in Tidbinbilla, consideration will be given to:
 - its relationship to the objectives and policies outlined in this plan
 - relevant legislative provisions and government policies
 - the capacity to undertake the activity outside the reserve
 - relevant policy within the other Australian Alps national parks
 - the potential impact of the activity on the natural and cultural heritage values of the reserve and on visitors
 - public health and safety and the exposure of park management to risk.

(k) Orienteering, Rogaining, Mountain Running

There is limited use of Tidbinbilla for these activities. Orienteering is a sport in which individual participants walk or run around a course, navigating with a map and compass. Rogaining is the sport of long-distance cross-country navigation, in which teams of two to five people visit orienteering type control points within a set time period. Mountain running is conducted on trails in natural and semi-natural areas and includes an altitudinal component. There are a number of considerations in conducting such events in Tidbinbilla, the most important being:

- potential impacts of the large number of participants on reserve values (e.g. trampling of vegetation, disturbance to wildlife and cultural heritage sites)
- social impacts, especially on visitors who have come to Tidbinbilla for nature study or to seek the solitude of the bush
- the need for toilet facilities, parking, and sites capable of withstanding high intensity use for short periods as staging areas.

Environmental impacts can be mitigated by the careful selection of staging areas and the routes of courses, avoidance of sensitive areas or sites, cancelling or postponing events in adverse conditions (e.g. following heavy rain), provision of appropriate facilities (e.g. portable toilets), and initiatives such as car-pooling or using buses to reduce parking requirements. Social impacts may be more difficult to overcome; however, public notification of major events is important to advise other users. The impacts of the activities should be monitored as a basis for management policy.

The use of Tidbinbilla for large scale sporting events should be planned in consultation between reserve management, other government agencies and the sporting organisations concerned. This would include scheduling of events; identification of suitable sites, routes and staging areas; provision of facilities; transport and parking; monitoring requirements and criteria; and conditions pertaining to the permitted events.

POLICIES

- Orienteering, rogaining and mountain running events will be permitted in Tidbinbilla, subject to the following conditions:
 - Events will require a permit from Tidbinbilla management. Fees will apply and a bond may be required.
 - Event areas are to be chosen in consultation with reserve management giving special attention to protection of natural and cultural heritage values and avoidance of sensitive sites.
 - Limits may apply to the size of an event, car parking, and the staging area.
 - A monitoring and reporting program is to be established that is appropriate to the scale and type of event and the areas used, based on agreed criteria.
 - The number of events permitted in any year in any part of Tidbinbilla may be limited.
- Special arrangements may be made to cater for occasional large national or international events. These should aim to showcase both the sport and a high standard of environmental management.
- A detailed event management plan will be required for large events.

(l) Group Activities (e.g. bushwalking clubs, social clubs, tour groups, conference groups, family groups)

Tidbinbilla is a popular destination for group activities for which permits or special arrangements are not required. Large group activities that require considerable space, parking and are likely to affect other users are considered under **Special Events** (below) and **Orienteering, Rogaining and Mountain Running** (above).

POLICIES

- No permit or special arrangements are required for small group activities that are in accordance with the management objectives for Tidbinbilla.
- Exclusive use of facilities and locations normally open to visitors (e.g. picnic areas) will generally not be granted to groups. See policies for Special Events below.
- Special access privileges may be granted to groups where this is likely to be of benefit to the management of the reserve or is for scientific or educational purposes, and access is not in conflict with management objectives and policies.

(m) Special Events

Special events encompass a range of activities such as large group gatherings, weddings, ceremonies, concerts, Aboriginal cultural events and other large public gatherings. In general, Tidbinbilla is not the place to hold large events that do not relate to, or are incompatible with, the values of the area as defined in this management plan.

It is desirable that more detailed planning be undertaken for the Tidbinbilla Valley (and potentially the land in Birrigai) to determine areas in Zone 3 suitable for events. Such sites would be ones where there was unlikely to be conflict with other visitors and likely to be minimal impact on the values of the area. Determination of suitable sites is an appropriate task for the proposed Tidbinbilla master plan. The Flints Picnic area, which has toilet facilities, may be a suitable site for occasional special events.

POLICIES

- All organised events require a permit from Tidbinbilla management.
- An event management plan may be required for an approved activity.
- Exclusive use of facilities and locations normally open to visitors (e.g. picnic areas) will not generally be provided.
- Fees and bonds for special events will be charged according to the ACT Government approved fees and charges schedule for the reserve and include administrative and management costs.

ACTION

- Determine suitable sites for large events in Tidbinbilla that contain necessary facilities, avoid conflict between the event and other users, and minimise impact on the values of Tidbinbilla.

(n) Public Vehicle Use on Management Trails

Public vehicle use on management trails is not generally permitted in Tidbinbilla. However, access for public vehicles (normally four-wheel drive vehicles but not trail bikes) may be permitted for specific authorised purposes e.g. for authorised research projects; for specialised groups such as conference tour groups; for open days (under ranger supervision); for volunteer work; for approved tourism operations; and in association with the hire of Nil Desperandum. Road access to Nil Desperandum is suitable normally for two-wheel drive vehicles. The ACT Government (Parks and Conservation) has a memorandum of understanding with 'Four Wheel Drive NSW and ACT Inc.' (a peak user group) which, among other things, defines a range of projects that could jointly be undertaken, some of which may involve 4wd access to otherwise closed areas.

POLICIES

- Public vehicle use is not generally permitted on management trails in Tidbinbilla.
- Access by public vehicles (mainly four wheel drive vehicles but not trail bikes) may be permitted for specific authorised purposes, following consideration of:
 - the concordance of such access with management objectives
 - the potential impact on the values of Tidbinbilla
 - licensing arrangements (commercial tourism operators).
- Public vehicle access through Jedbinbilla (Zone 2) will be permitted in association with the hire of Nil Desperandum.
- Vehicle access to management trails will be closed where there is an unacceptable risk to public safety, potential damage to the road, or for other management considerations.

Table 8.1 General policies for recreational activities and permitted/prohibited activities in the Tidbinbilla management zones

Recreational Activity and Policy	Zone 1: Core Conservation	Zone 2: Conservation & Rehabilitation	Zone 3: Developed Recreation & Education
Permitted Activities			
Walking Tidbinbilla is available for day walks only (no overnight bush camping). Walking is encouraged on designated walking tracks and management trails.	Mainly longer or more strenuous day walks, including those for more self reliant bushwalkers.	Walks to be investigated and developed.	Short family oriented walks, also suited to school children. Some suitable for use with strollers or wheel chairs.
Cycling (including mountain bike riding) Cycling will be permitted on formed vehicle roads, management trails and designated cycle paths, including multiuse paths (i.e. no off-road or walking track riding).	All management trails.	All management trails.	Public roads, management trails, designated cycle paths.

Recreational Activity and Policy	Zone 1: Core Conservation	Zone 2: Conservation & Rehabilitation	Zone 3: Developed Recreation & Education
Picnicking (including use of barbecue facilities) Picnicking is a very popular recreational activity at Tidbinbilla and will be supported by the provision of suitable facilities (Zone 3).	Permitted. Few facilities and no general vehicle access.	Permitted. Few facilities and no general vehicle access.	Main area for picnics with seating, tables, barbecues, toilets and some shelter provided.
Fires (lighting of fires)	Not permitted.	Not permitted.	Only in wood barbecues.
Scenic Driving/Sightseeing (2wd) This is confined to the sealed 2wd circuit at the head of the Tidbinbilla Valley passing the Sanctuary. There is a lookout on the southern side of this loop.	Not applicable.	Not applicable.	On public roads.
Rock Climbing and Abseiling There is a low level of rock climbing and abseiling use (Gibraltar Peak, Birrigai).	Permitted (except for significant Aboriginal cultural heritage sites).	Not permitted in Jedbinbilla.	Permitted under supervision by qualified staff at Birrigai.
Flying - non-powered (e.g. hang gliding, paragliding, balloon flying) Tidbinbilla lacks suitable sites for hang gliding and paragliding. Hot air balloons may be associated with special events.	Management permission required.	Management permission required.	Management permission required.
Nature Based Activities including Wildlife Viewing and Bird Watching These activities will be encouraged and supported.	Permitted.	Permitted.	Permitted.
Visiting Natural and Cultural Heritage Sites Encouraged and appropriate facilities, interpretation and site protection will be provided.	Facilities and interpretation limited or not provided. Protection measures, if necessary.	Facilities (e.g. walks) and interpretation to be investigated and may be developed. Protection measures, if necessary.	Facilities (e.g. car parks, walkways, boardwalks), interpretation, and protective measures provided.
Geocaching Geocaching is permitted with conditions.	Not permitted.	Conditional (no digging, burying, use of rock shelters, or leaving objects).	Conditional (no digging, burying, use of rock shelters, or leaving objects).
Orienteering, Rogaining, Mountain Running These events may involve a large number of participants. A small number of events are conducted each year at Tidbinbilla and require a permit.	Permitted. Conditional.	Permitted. Conditional.	Permitted. Conditional.

Recreational Activity and Policy	Zone 1: Core Conservation	Zone 2: Conservation & Rehabilitation	Zone 3: Developed Recreation & Education
<p>Non-commercial Group Activities (e.g. bushwalking clubs, social clubs, tour groups, conference groups, family and other groups)</p> <p>Group activities that are in accordance with the management objectives for Tidbinbilla will continue to be supported.</p>	Permitted. Mainly bushwalking.	Permitted.	Permitted. Birrigai at Tidbinbilla has conference facilities.
<p>Special Events</p> <p>Special events encompass a range of activities such as weddings, ceremonies, concerts, Aboriginal cultural events and other public gatherings.</p>	Not generally permitted (except orienteering, rogaining, mountain running above). Aboriginal cultural events subject to negotiation and protocols.	Not generally permitted (except orienteering, rogaining, mountain running above). Aboriginal cultural events subject to negotiation and protocols.	Permitted. The preferred location for events.
<p>Commercial Recreation/Tourism Activities (s. 8.7)</p> <p>Commercial activities are those undertaken by organisations, businesses or individuals that charge a fee for services or products. A permit is required.</p>	Permitted. Conditional and permit/licence required.	Permitted. Conditional and permit/licence required.	Permitted. Conditional and permit/licence required.
<p>Public Vehicle Use on Management Trails (trail bikes, 2wd and 4wd vehicles, other powered vehicles)</p> <p>Only for management and other approved purposes (see Access in Table 5.2). Public vehicles are normally only permitted on the public road network in Tidbinbilla.</p>	Not generally permitted. May be permitted for specific authorised purposes (no trail bikes).	Not generally permitted. May be permitted for specific authorised purposes (no trail bikes) and access to Nil Desperandum.	Public vehicles on public road network only.
<p>Car Camping</p> <p>Car based camping is generally not permitted in the precinct. It may be permitted in association with the hire of Nil Desperandum (Zone 1) and in Zone 3 subject to the objectives and policies in this plan.</p>	Not generally permitted. May be permitted in association with the hire of Nil Desperandum	Not permitted	May be permitted subject to the objectives and policies in this plan. Permit required.
Prohibited Activities			
<p>Pack Camping</p> <p>Pack camping (overnight bushwalking) is not permitted in the precinct.</p>	Not permitted.	Not permitted.	Not permitted.
<p>Car Rallies (using management trails)</p> <p>Car rallies using management trails do not accord with the management objectives for Tidbinbilla and will not be permitted.</p>	Not permitted.	Not permitted.	Not permitted.

Recreational Activity and Policy	Zone 1: Core Conservation	Zone 2: Conservation & Rehabilitation	Zone 3: Developed Recreation & Education
Fishing The Tidbinbilla River is a Closed Water under the <i>Fisheries Act 2000</i> and fishing is not permitted. Yabbying is not permitted in dams or impounded waters in the precinct except as part of an approved educational activity.	Not permitted.	Not permitted.	Not permitted.
Boating, Canoeing, Rafting The Tidbinbilla River is not a suitable stream for such activities. Use of water craft for recreational purposes is not permitted on other water bodies in the precinct such as dams or impounded waters.	Not permitted.	Not permitted.	Not permitted.
Hunting Hunting is not permitted. Under the <i>Nature Conservation Act 1980</i> , the taking of animals or use of a firearm or other hunting weapon is not allowed in reserve areas.	Not permitted.	Not permitted.	Not permitted.
Bringing Pets Pets (e.g. dogs and cats) are not permitted in the precinct. Guide dogs are permitted.	Not permitted.	Not permitted.	Not permitted.
Horse Riding Horse riding is not permitted in the precinct.	Not permitted.	Not permitted.	Not permitted.
Flying (powered, low altitude e.g. ultralights) Ultralight aircraft are not permitted to land or take off in the precinct except in an emergency.	Emergency only.	Emergency only.	Emergency only.

8.9 Recreation Facilities

Tidbinbilla contains high quality recreation facilities focused to day users. These facilities are more of a 'developed' type than in the adjacent Namadgi National Park and include the Visitor Information Centre, the Sanctuary, picnic and barbecue facilities, children's playground, toilets, water supply, walks and boardwalks, car parks, and signs. Rubbish bins are not provided.

The Visitor Information Centre, near the entrance to Tidbinbilla, replaced an earlier one located on the former reserve boundary at Turkey Hill. The former centre was used as an education centre until it was destroyed in the 2003 bushfire. The current visitor centre survived the 2003 bushfire. It provides brochures, information on ranger guided activities and a daily activities guide; collects entry fees; sells souvenirs, clothing, books and maps; provides limited refreshments; and has toilet facilities. It has a small display area at the rear of the building. It is intended to expand the role of the centre to enhance the provision of information on the ACT parks and reserves system. While information, orientation, advice on activities, and fee collection need to remain at the entrance some of the other functions would be better placed in an education centre should one be re-established.

Clear, informative signs are important to the visitor experience. As part of all design and construction elements, there is the opportunity to establish a recognisable appearance for signs that helps create a 'sense of place'. The design of signs should clearly link to the attributes and special characteristics of the place. Signs should also clearly identify the hierarchy of walking tracks and the permitted activities on walking tracks and vehicle management trails.

Tidbinbilla Nature Reserve and Birrigai have separate entrances. The Birrigai entrance is sited towards the base of a hill with poor visibility, especially when travelling from Tharwa or Point Hut. A relocated entrance is desirable if the role of Birrigai at Tidbinbilla is to be expanded e.g. developing the accommodation potential. Analysis of the options for a relocated entrance is best considered in a master plan for the more intensively used parts of Tidbinbilla (s. 11.8).

RECREATION FACILITIES

OBJECTIVE

- **Recreation facilities are designed, sited, constructed and maintained so as to enhance the experiences of visitors and to minimise adverse impacts on the values of Tidbinbilla.**

POLICIES

- Visitor facilities will be provided at Tidbinbilla that support permitted recreational activities, enhance visitor experiences, and minimise impacts on the natural and cultural heritage values of the precinct.
- High standard signs will be used in Tidbinbilla with a recognisable appearance that identifies them with Tidbinbilla and its characteristics.
- Where practicable, access and facilities will be designed for visitors with limited mobility or disabilities, and for young children (i.e. stroller friendly).

ACTIONS

- Maintain recreational facilities to a high standard to minimise impact on the values of the precinct and to ensure public safety.
- Enhance displays and the distribution of material related to the ACT parks and reserves system in the Visitor Information Centre at Tidbinbilla.
- In a master plan for the more intensively used parts of Tidbinbilla, investigate the benefits and feasibility of relocating the entrance to Birrigai.

8.10 Staying Overnight

Since its establishment, Tidbinbilla Nature Reserve has operated as a day-use area only. In the decisions about Tidbinbilla following the 2003 bushfire, the ACT Government agreed in principle to 'limited accommodation' as part of the recovery and rebuilding of the area. Birrigai at Tidbinbilla provides accommodation for up to 198 people in cabins with dormitory style rooms (134 people) and smaller units with attached bathrooms (64 people). Hiring of accommodation at Birrigai at Tidbinbilla has historically focussed on meeting the needs of formal groups (especially school groups) rather than individuals. There is the opportunity for Birrigai at Tidbinbilla to further develop and market its accommodation facilities. Tent camping is permitted at Birrigai in association with outdoor/education programs. This management plan also provides for the short-term hire of Nil Desperandum house. Limited tent camping will be permitted in association with such hire. Hirers may access Nil Desperandum by motor vehicle, walking or cycling.

The possibility of establishing 'eco-lodge' style accommodation was considered in the Shaping Our Territory reports (Non-Urban Study Steering Committee 2003b; Shaping Our Territory Implementation Group 2004) and could be considered for the Special Purpose Reserve part of Zone 3. Suitable locations for such accommodation, aimed at the 'high yield' component of the tourism market, are appropriately considered in the proposed master plan for Tidbinbilla (s. 11.8) and a business case would also need to be prepared to determine viability. This plan

provides for a range of low key accommodation options to be considered for the Tidbinbilla Valley (Special Purpose Reserve – Zone 3) in association with the exploration of further tourism opportunities for Tidbinbilla. Future provision of any low key accommodation facilities will be subject to the management objectives and policies in this plan and the outcomes of the proposed master plan. Types of accommodation options that may be considered include ‘eco-lodge’ style accommodation, ‘eco-cabins’, and car based camping*.

West of the Murrumbidgee River, there are vehicle based camping areas in Namadgi National Park, some former ACT Forests sites and at the Cotter Campground. These have fairly basic facilities and low fees. The nearest camping area to Tidbinbilla is at Woods Reserve on the Corin Road.

(* Camping where vehicles can be parked near tents or a short distance away (suitable for family camping). A camping area of this type could also accommodate small campervans, small caravans and camper-trailers. These vehicles usually require reasonably level sites.)

STAYING OVERNIGHT

OBJECTIVES

- **Birrigai at Tidbinbilla and Nil Desperandum successfully provide the opportunity to stay overnight at Tidbinbilla.**
- **The desirability and feasibility of establishing other low key overnight stay options in Tidbinbilla (e.g. car based camping, cabins, lodges) is evaluated.**
- **Opportunities to establish overnight stay options are pursued, if they are determined to be feasible, desirable and are in accordance with the objectives and policies of this management plan.**

POLICIES

- The opportunities for accommodation in Birrigai at Tidbinbilla will be investigated, developed and marketed.
- Nil Desperandum house will be made available for short term hire based on:
 - preparation of a hiring policy and conditions
 - establishment of access arrangements including in emergencies
 - provisions for the conservation of the house and its surroundings
 - provision for limited tent camping in association with the hire.
- A range of low key accommodation options will be considered for the Tidbinbilla Valley (Special Purpose Reserve – Zone 3) in association with the exploration of further tourism opportunities for Tidbinbilla.
- Specific proposals for the development of new facilities for overnight stays would be subject to environmental impact assessment, an analysis of their likely viability, and their concordance with the objectives and policies in this management plan.

ACTIONS

- Establish an appropriate business model for the operation of Birrigai at Tidbinbilla to develop overnight accommodation opportunities for the public.
- Prepare and implement hiring arrangements for Nil Desperandum, in terms of the policy outlined above.
- Consider the desirability and feasibility of establishing vehicle-based (tent) camping and ‘eco-lodge’ and ‘eco-cabin’ style accommodation at Tidbinbilla (Zone 3) in association with expanded tourism opportunities for Tidbinbilla.
- Pursue opportunities to establish further overnight accommodation, if these are feasible, desirable and in accordance with the other objectives and policies in this management plan and the outcomes of the master plan.
- Promote the Woods Reserve camping area to those seeking a vehicle-based campground in the vicinity of Tidbinbilla.



Interpretation is an educational activity which aims to reveal meanings and relationships through the use of original objects, by first hand experience, and by illustrative media, rather than simply to communicate factual information.

(Freeman Tilden, United States National Parks Service, 1957)

9.1 Primary Management Objectives

- **Tidbinbilla provides high quality, well recognised opportunities for visitors to acquire knowledge of, and to understand and enjoy, the natural and cultural heritage of the area.**
- **Birrigai at Tidbinbilla delivers successful education programs to both school and non-school based groups.**

9.2 Background

The two related subjects of education and interpretation should be clearly distinguished:

- **Interpretation** is a form of expert guidance aimed at a greater understanding of the features of a particular place set within wider themes.
- **Environmental education** is concerned primarily with wider themes but may use interpretation of the local place to illustrate the theme.

Education and interpretation programs and activities commenced at Tidbinbilla Nature Reserve within a few years of its establishment. The first Tidbinbilla Reserve Advisory Committee, formed in 1963, developed a number of fauna display ideas and these were given status in the first overall plan for Tidbinbilla (Margules SR and Associates 1968) (Appendix 2). Previous Aboriginal presence in the valley, flora and fauna, scenery and geology were included in interpretive material by the early 1970s (Department of the Interior 1972).

During the 1970s and 1980s, there was significant expansion in the knowledge of the natural environment and prehistory of the Tidbinbilla area. There was also investment in major infrastructure such as the wetland/waterbird area and walking trails. By the mid-1990s, there was a need to rejuvenate the reserve as part of raising the profile of nature based tourism in the ACT. A capital works program was prepared, as well as an interpretation strategy, based on an 'encounter wildlife' theme. Interpretation and education were included in the 1999 management plan. From the late 1970s, Birrigai at Tidbinbilla has established a range of teacher-delivered experiential programs in outdoor education, environmental education and heritage studies. Since that time, large numbers of school students have attended these programs.

In the wake of the 2003 bushfire, the education role of Tidbinbilla-Birrigai was endorsed by the Non-Urban Study Steering Committee (2003b) associated with improved tourism and recreation opportunities. This was supported by the ACT Government. These concepts were further developed in the *Business Case and Master Plan: Tidbinbilla* (Shaping Our Territory Implementation Group 2004). In 2005 a new concept plan for 'nature discovery' in Tidbinbilla Nature Reserve was developed (Sanmore Consulting Group 2005) to commence the establishment of the new facilities as part of the rebuilding of Tidbinbilla. Education and interpretation have a strong focus in the Wildlife Precinct and material is provided throughout the reserve to guide and inform visitors.

9.3 Management Considerations and Issues

The following considerations and issues are relevant to education and interpretation at Tidbinbilla:

- **Communication:** There is a need to maintain an up-to-date communication program that effectively and efficiently targets visitors, the broader ACT community, educational interests, the media and other stakeholders (s. 8.6). Education and interpretation programs need to keep pace with developments in learning methods. For an area such as Tidbinbilla this will come not only from the education sector but also from agencies responsible for protected area management in Australia and elsewhere. The full range of information and communication technologies should be considered in developing educational and interpretation programs at Tidbinbilla.
- **Interpretation and education:** While the related subjects of education and interpretation should be clearly distinguished, at Tidbinbilla the common factor is that the learning is experiential. Many protected areas in Australia (and elsewhere) combine both interpretation and education in their public programs. At Tidbinbilla there is the opportunity to build upon the combined expertise of Birrigai at Tidbinbilla and Tidbinbilla Nature Reserve in environmental education and interpretation, as well as drawing on knowledge and expertise from elsewhere, such as the Australian Alps national parks network.
- **Delivery of education and interpretation programs:** Ranger guided programs are well established at Tidbinbilla and a substantial body of supporting information has been established over time. Teacher-delivered education programs are similarly well established at Birrigai, covering adventure, outdoor and environmental education. In recent years, Conservation Volunteers has been contracted to provide volunteer guides on weekends, public holidays and school holidays. Community groups also play a part e.g. the Tidbinbilla Pioneers Association. There is the potential for licensed tour operators to also be involved.
- **Aboriginal cultural heritage:** Developing the interpretation of Aboriginal cultural heritage based on a more a strategic approach is proposed for Tidbinbilla (Chapter 7). To achieve this, further archaeological survey and research is necessary, especially in relation to the rock shelters in Jedbinbilla. Development of Aboriginal cultural heritage will involve local Aboriginal people.
- **European cultural heritage:** There is the opportunity for wider interpretation of the European cultural history of Tidbinbilla (Chapter 7). The settlement history is reasonably well documented in a process that is continuing through the Tidbinbilla Pioneers Association. Conservation management plans for significant cultural heritage places are also important additions to knowledge of European settlement.
- **Birrigai at Tidbinbilla:** Birrigai at Tidbinbilla will remain primarily an educational centre serving schools in the ACT and surrounding area. The central considerations for Birrigai at Tidbinbilla into the future are: (a) the development of niche environmental and outdoor education programs; and (b) complementary marketing and promotion to non-school groups for both facilities and experiences.
- **Education centre:** Birrigai at Tidbinbilla performs the key education role at Tidbinbilla and the intention is for this to expand. In conjunction with the programs at Birrigai at Tidbinbilla and the activities and facilities in the Wildlife Precinct, an education centre established in or near the precinct could fulfil a number of useful roles and some of the functions of the Visitor Information Centre could be moved to the centre. However desirable a centre might be, a significant issue for management is the long-term recurrent cost of operating and maintaining such a facility.

9.4 Education

Environmental education programs are designed to impart information, change attitudes and behaviour, and encourage the development of community based environmental institutions (Worboys et al. 2005). Environmental education can build capacity in the community to meet the challenges of sustainable environmental management. A key purpose for protected area agencies seeking to educate visitors is to promote awareness and understanding of conservation values.

Environmental education is part of the curricula of the formal education sector involving a series of linked learning programs with defined outcomes in mind. Environmental education is concerned with themes and the importance of places such as Tidbinbilla is in providing a location to illustrate or demonstrate those themes through the features, attributes, issues and questions that arise in particular places including opportunities to directly observe, survey, measure and evaluate a particular aspect of the environment.

Outdoor education, environmental education, and heritage studies are well established and important activities at Tidbinbilla through the experiential learning programs of Birrigai at Tidbinbilla. Environmental education is also established as part of the programs at Tidbinbilla Nature Reserve with the key theme developed for the Sanctuary being that of the interdependence of all living things. Community groups also have an important role e.g. Tidbinbilla Pioneers Association with its focus on European settlement in the area, and Friends of Tidbinbilla with programs such as Frogwatch.

There have been previous proposals for an education centre or 'nature discovery centre' at Tidbinbilla e.g. Shaping Our Territory Implementation Group (2004). In conjunction with the programs of Birrigai at Tidbinbilla and the activities and facilities in the Wildlife Precinct, functions of such a centre could include: interpretive and educational displays (e.g. related to the wildlife collection and threatened species programs); a focal point for community and volunteer activities and their presentation to visitors; use by school groups; and special education programs and activities. Such a centre should be integrated with, and not duplicate, the role or functions of Birrigai at Tidbinbilla.

EDUCATION

OBJECTIVE

- **Tidbinbilla provides high quality, well recognised opportunities for the formal education sector, the community and visitors to learn and understand more about the environment, environmental issues, and ways to meet the challenges of more sustainable environmental management.**

POLICIES

- Opportunities will be taken to integrate the outdoor education, environmental education and heritage studies programs that are organised at Birrigai at Tidbinbilla into the education programs for Tidbinbilla as a whole.
- The aim of education programs and materials at Tidbinbilla is to improve knowledge and understanding of the environment, environmental issues and appropriate ways to use and relate to the environment.
- Education activities will be mainly undertaken in the Wildlife Precinct and at Birrigai at Tidbinbilla and strong links will be maintained between the two sites.

ACTIONS

- Investigate the benefits and feasibility of establishing an education centre at Tidbinbilla in association with the Wildlife Precinct. Include an assessment of suitable sites for such a facility in a master plan for the more intensively used parts of Tidbinbilla (s. 11.8).
- Integrate the education activities of Birrigai at Tidbinbilla and Tidbinbilla Nature Reserve through co-operative arrangements involving programs, staffing and facilities.

9.5 Birrigai at Tidbinbilla

Birrigai at Tidbinbilla (formally known as Birrigai Outdoor School) has operated for 30 years providing experiential learning programs for school students in outdoor education, environmental education and heritage studies. While Birrigai at Tidbinbilla will remain primarily an educational centre serving schools in the ACT and surrounding area, the potential is recognised to further develop the use of the facility by non-school groups. During the term of this management plan, the intention for the precinct is to integrate the educational programs of Birrigai at Tidbinbilla and Tidbinbilla Nature Reserve to a much greater degree than in the past.

BIRRIGAI AT TIDBINBILLA

OBJECTIVE

- **Birrigai at Tidbinbilla is a successful, high quality outdoor and environmental education facility catering for both school groups and other visitors.**

POLICIES

- Program development and marketing will be undertaken to promote Birrigai at Tidbinbilla.
- While retaining its own identity, the programs and facilities of Birrigai at Tidbinbilla will be integrated into those for Tidbinbilla as a whole.

ACTIONS

- Through the establishment of joint staff teams across Birrigai at Tidbinbilla and Tidbinbilla Nature Reserve, consolidate and expand the development of educational experiences for both school groups and the community.
- Develop programs with Tidbinbilla ranger staff and volunteers, build staff expertise and external partnerships, and communicate to existing and potential users the educational opportunities available at Birrigai at Tidbinbilla.
- Consider integration of Birrigai education activities with those for Tidbinbilla as a whole, when developing a Tidbinbilla master plan.
- Ensure the educational programs on offer at Birrigai at Tidbinbilla are aligned to the new Australian Curriculum to meet the needs of schools from the ACT and beyond.

9.6 Interpretation

Interpretation is an experiential educational activity that involves 'expert guidance' and can take a number of forms e.g. a ranger or volunteer guide; signs that explain what is being observed; and explanatory brochures, field guides and self-guiding information. For many visitors, an important part of interpretation is the interaction with the guide, while others prefer to explore at their own pace. A comprehensive interpretation program offers a range of options tailored to the place and the types of visitors that come there. Interpretation involves translating stories of places, the biota and people in terms that motivate and inspire visitors to greater understanding and care. Outstanding interpretive experiences are likely to be remembered long after the event.

The interpretation of the key values of protected areas to visitors is integrated with recreation and tourism planning and site developments (DEC Western Australia 2007). When planned and implemented effectively, interpretation is a valuable and central management tool and also has the potential to generate income. Worboys et al. (2005) define the following principles for interpretation planning:

- interpretation is neither teaching nor instruction in the academic sense
- interpretation must be enjoyable for visitors
- interpretation must be relevant for visitors
- interpretation must be well organised so that visitors can follow it
- interpretation should have a theme, not simply a topic.

Key interpretive themes for Tidbinbilla include:

Natural Heritage

- the interdependence of all living things
- the 'nature discovery' focus in the Wildlife Precinct (including the Sanctuary)
- bushfires, regeneration and ecological processes
- important or distinctive vegetation communities in the forests of the surrounding ranges
- important, distinctive and threatened plant and animal species and their conservation
- endangered species (in the wildlife collection)
- geodiversity, in particular, the varying geology and outstanding granite rock formations
- managing for the effects of climate change
- sustainable resource use (where this is demonstrated in the provision of facilities and infrastructure and use of natural resources e.g. water).

Cultural Heritage

- Aboriginal Cultural Heritage
 - Tidbinbilla as a place of Aboriginal occupation over millennia
 - social value to local Aboriginal people
 - intrinsic scientific value of particular sites
 - ongoing Aboriginal connection to Country
 - the place of Tidbinbilla sites in the scientific study of the Aboriginal occupation of Australia
- European Cultural Heritage
 - pastoralism and other rural land uses in the 19th and 20th centuries
 - conservation including land reservation, koala enclosures and wildlife studies in the 20th century
 - forest industry: eucalyptus oil distilling in the 20th century

INTERPRETATION

OBJECTIVE

- **Interpretation at Tidbinbilla is widely recognised as being of a high standard, informing and enriching visitor experiences, assisting people to understand more about their natural and cultural heritage, and communicating conservation ideals and practice.**

POLICIES

- An interpretation program will be continued and further developed at Tidbinbilla based on the features and characteristics of the natural and cultural heritage of the area.
- Interpretation will involve a range of methods and media including ranger and volunteer guided activities, printed and electronic material, static and interactive displays, and signs.
- Fees may be charged for particular guided interpretive activities and for interpretive materials.

ACTIONS

- Continue to develop the interpretation program at Tidbinbilla using a range of methods and media that is tailored to places, themes and the different types of visitors.
- Give particular attention to high quality interpretation for visitor attractions such as the Sanctuary and the Gibraltar Peak walk.
- Provide training for rangers and volunteer guides, and assistance to tour operators so that they are able to provide high quality interpretive services.
- Explore ways to involve local Aboriginal people in the interpretation of Aboriginal cultural heritage at Tidbinbilla.



Superb Lyrebirds are spectacular songsters! Their song output is all high energy stuff and is commonly sustained for long bouts of singing, particularly at dawn but again at dusk. In their song they mix distinctive lyrebird elements, including regionally characteristic territorial calls, along with huge amounts of mimicry. They sing in the depths of winter and they sing from within dense mountain forests where the reverberation of sound is magnificent! ... Listening to lyrebirds is a truly unforgettable experience.

(Peter Fullagar 2008)

10.1 Primary Management Objectives

Through research partnerships, Tidbinbilla facilitates and participates in:

- **environmental research related, in particular, to threatened species conservation, captive breeding programs, and ecosystem management following disturbance**
- **research related to the Aboriginal and European cultural heritage of the area**
- **other research that assists in building knowledge and understanding for professional reserve management.**

10.2 Background

A focus on native animals, education and research is central to the history of Tidbinbilla Nature Reserve. The first initiatives predated the reserve. These were the short-lived koala enclosure on Hurdle Creek (1939) and the long-standing observations on lyrebirds (1959 to present) (Bulbeck and Boot 1991; Fullagar 2008). The first Tidbinbilla Reserve Advisory Committee developed a number of fauna display ideas and these were given status in the first overall plan for Tidbinbilla (Margules SR and Associates 1968) (Appendix 2). In 1969, the first wildlife display was introduced at the reserve and this, together with captive breeding programs, was to be a feature of Tidbinbilla that set it apart from other conservation reserves in the ACT. Archaeological and historical research has been instrumental in establishing and defining the values of Tidbinbilla (Chapter 7). The captive wildlife collection and captive breeding programs are distinctive and well-known features of Tidbinbilla. Attention has been given to defining the purposes and directions for this collection and these are outlined in s. 10.4. It is important that the captive wildlife program contributes to wildlife conservation in the ACT region, and elsewhere for selected threatened species, as well as supporting the ACT Government's role in ecosystem conservation and management.

10.3 Management Considerations and Issues

The following considerations and issues are relevant to research and monitoring at Tidbinbilla:

- **Wildlife programs:** Particular considerations and issues related to the wildlife program include: the purposes of maintaining a wildlife collection; a policy on what animals will be included; the balance between a visitor focus and a scientific focus; and recognition of long-term resourcing and veterinary support requirements.
- **Survey, monitoring, research:** Survey, monitoring and research are related endeavours but they are not the same (see **Glossary**). Though survey, monitoring and research are important and often essential for sound reserve management, managers rarely have adequate resources for large-scale and/or long-term data collection and the funding of research projects (Worboys et al. 2005). However, they have ways of facilitating such work through partnerships with research institutions, provision of logistic support, protection of research sites, communications and safety backup. Research, especially applied research, is able to provide knowledge and understanding to inform management decision-making, and is integral to adaptive management (see **Glossary**). The landscapes and ecosystems of places such as Tidbinbilla also provide a protected environment for carrying out more fundamental research.

- **Threatened species research:** Tidbinbilla can play an important role in facilitating research related to the conservation biology of a selected number of threatened species. Tidbinbilla has excellent facilities for maintaining captive animals, but to develop its threatened species research role, it must maintain and establish links with relevant research organisations. There may be public and educational interest in particular threatened species, their biology and ecology, and conservation requirements. However, display and public involvement always needs to be considered in terms of the conservation requirements for the species.
- **Pest animal monitoring:** Monitoring is an integral part of an effective pest management program and is necessary to evaluate the effectiveness of previous programs. Regular spotlight monitoring is carried out at Tidbinbilla to assess abundance of pest animals, such as rabbits, cats and foxes.
- **Cultural values:** As noted in Chapter 7 there is potential for further research to be undertaken at Tidbinbilla related to past Aboriginal and European occupation and ongoing connections to the place.

10.4 Wildlife Collection

WILDLIFE COLLECTION

OBJECTIVE

- **Tidbinbilla is widely recognised for its high quality wildlife collection with captive animals held for two purposes:**
 - **general education programs involving observation of wildlife**
 - **selected conservation and research programs requiring the maintenance of captive specimens of threatened species or close analogues of threatened species.**

Animal displays have been part of Tidbinbilla Nature Reserve from soon after its establishment. In the early years, display species were often chosen according to animal availability, national significance, public interest value and the maintenance required. From the late 1980s the emphasis was on regional species, selected endangered species and species of special research or educational value, such as the brush-tailed rock wallaby (ACT Government 1999a). In more recent times, captive breeding programs have been established for the brush-tailed rock wallaby, freckled duck and the northern corroboree frog. The 2003 fire destroyed most of the wildlife facilities and significantly impacted on the wildlife program, including a large loss of animals. The facilities have been progressively re-established. Koalas are linked to the early history of the reserve (Appendix 2) and the captive koala population maintained in a natural enclosure has been a key attraction at Tidbinbilla. To provide a future supply of food for the captive koala population, a 'browse plantation' has been established in the former Gibraltar Pines area.

It is essential to have a clear policy on what animals will be included in the wildlife collection at Tidbinbilla. A *Tidbinbilla Wildlife Collection Policy* (PCL 2009) has been developed, to explicitly define the scope of the collection. In particular this defines the criteria for the holding of: (a) species for general education purposes, and (b) threatened species. An associated *Tidbinbilla Wildlife Collection Plan* outlines management and operational aspects for the collection.

POLICIES

- The objectives, principles and policies for the wildlife collection at Tidbinbilla will be set out in a Tidbinbilla Wildlife Collection Policy.
- A high standard of captive animal management and facilities, including veterinary support, will be provided to ensure the health, welfare and security of animals.
- Animals will be displayed in a setting resembling, as close as possible, their natural habitat.
- Close attention will be given to maintaining the genetic integrity of captive animals.
- Tidbinbilla may provide assistance to regulatory authorities in temporarily holding and caring for confiscated and other displaced animals.

ACTIONS

- Seek corporate partnerships, sponsorships and donations to support the operation of the wildlife collection (s. 4.3).
- Where appropriate, provide opportunities for community involvement in programs associated with the wildlife collection.
- Prepare species management plans for all species displayed at Tidbinbilla. These plans are to be prepared in accordance with ACT legislation, Zoo and Aquarium Association requirements (Australasian Species Management Program) and other guidelines.
- Keep the Wildlife Collection Plan under review in relation to management requirements for the collection.
- Maintain liaison and interaction with other institutions to share information relating to captive management of native species.
- Investigate options for the use of the veterinary centre located in the Sanctuary.

General Captive Display

The *Tidbinbilla Wildlife Collection Policy* states that:

Species held for general captive display will have a natural range within, or have migration corridors across, the South Eastern Highlands and/or Australian Alps bioregions. These bioregions provide the geographical, climatic and habitat setting for the ACT. Natural range includes a known former range even if the animal is no longer found there.

For general education the wildlife collection at Tidbinbilla is not to become a zoo in the traditional sense, with animals drawn from a diverse range of places and exhibited because of certain characteristics, public appeal, and in some instances, ease of acquisition.

A general captive display of species from outside the South Eastern Highlands and Australian Alps bioregions has the potential to affect the identity of Tidbinbilla in relation to the local bioregion, as well as diluting key educational messages relating to appreciating and conserving the ACT environment. Therefore, display to raise public awareness is not a sufficient reason to include a species from outside the defined bioregions in the general captive display of the Tidbinbilla wildlife collection.

GENERAL CAPTIVE DISPLAY

OBJECTIVES

- **Tidbinbilla provides high quality opportunities for visitors to observe wildlife in natural settings and to learn about some of the animals that occur in the South Eastern Highlands and Australian Alps bioregions of south-eastern Australia.**
- **Wildlife viewing experiences at Tidbinbilla promote a greater awareness and appreciation of wildlife, habitats, ecology and conservation in the bioregions of which the ACT is a part.**

POLICY

- The general captive display in the wildlife collection will primarily focus on environmental education; introducing visitors to animals that occur in the ACT region that they are unlikely to see otherwise and educating them about ones that are more commonly seen.

See also **Policies** and **Actions** in s. 10.4 above.

Threatened Species

The *Tidbinbilla Wildlife Collection Policy* states that:

Threatened species (i.e. species on recognised threatened species lists) held at Tidbinbilla will not necessarily have a natural range within the South Eastern Highlands and/or Australian Alps bioregions. They will only be held, if from outside the South Eastern Highlands and Australian Alps bioregions, where the actions undertaken at Tidbinbilla are identified in the national or state recovery program for the species and the recovery team (if one exists) has endorsed these actions

to be undertaken at Tidbinbilla. Threatened species from outside the South Eastern Highlands and Australian Alps bioregions will not be held primarily for display or education purposes.

There is a large number of threatened species in the South Eastern Highlands and Australian Alps bioregions. There is the potential for Tidbinbilla to make an important contribution to the recovery of some of these species and to link to other ACT initiatives such as the Mulligans Flat Sanctuary. Because of its high quality wildlife facilities and animal husbandry expertise, Tidbinbilla is also capable of making a valuable contribution to the recovery of selected threatened species that do not occur in the South Eastern Highlands and Australian Alps bioregions.

THREATENED SPECIES

OBJECTIVES

- **Tidbinbilla makes a significant contribution to the recovery of selected threatened species through programs such as captive breeding and release back to the wild.**
- **Where feasible and taking into account the objectives of the program and the welfare of the animals, suitable aspects of the threatened species program are made accessible to visitors.**

POLICY

- Selected threatened species (i.e. species on recognised threatened species lists) will be included in the Tidbinbilla wildlife collection. Programs for these species may include:
 - captive husbandry (maintaining animals whose numbers have reached critically low levels)
 - captive breeding (this may include experimental breeding for animals not previously captive bred)
 - release to the wild of captive bred animals (at Tidbinbilla or elsewhere as part of a species recovery plan)
 - public display (this should not compromise the objectives of the program nor the welfare of the animals).
- Priority will given to threatened species that have a natural range within, or migration corridors across, the South Eastern Highlands and/or Australian Alps bioregions. Species with a natural range outside these bioregions may be held in accordance with the *Tidbinbilla Wildlife Collections Policy*.

ACTIONS

- Explore opportunities for further captive breeding programs at Tidbinbilla.
- Investigate appropriate ways to make the threatened species program of the wildlife collection accessible to visitors to Tidbinbilla.

See also **Policies** and **Actions** in s. 10.4 above.

10.5 Survey, Monitoring and Research

Much of the knowledge base for the management of Tidbinbilla derives from: (a) surveys of the flora and fauna and cultural heritage of the area; (b) monitoring of populations and the condition of native and introduced species, ecological communities and cultural heritage places; and (c) research that has been conducted in the area, other parks and reserves in Australia and elsewhere. The following is a brief outline of survey, monitoring and research that has been undertaken at Tidbinbilla.

Captive Husbandry and Breeding

Studies of animal species in the enclosures at Tidbinbilla have made an important contribution to husbandry and species management strategies. Many of these studies have been cooperative programs with other institutions e.g. Tidbinbilla maintained one of a number of captive colonies in south-eastern Australia of tammar wallabies from the Kangaroo Island population. The reproductive biology of this species has been intensively studied (Hinds 2008). A breeding colony of the locally extinct brush-tailed rock wallaby has also been established and Tidbinbilla has

provided animals for re-instatement programs elsewhere. Tidbinbilla Nature Reserve achieved the first successful captive breeding of Australia's rarest duck, the freckled duck. Following the 2003 bushfire, a successful captive breeding program has been undertaken for the endangered northern corroboree frog. Tidbinbilla is also participating in an eastern bettong (*Bettongia gaimardi*) reintroduction program for the ACT. An important ongoing role for Tidbinbilla is to facilitate research into the conservation biology of threatened species.

Environmental Survey, Monitoring and Research

Tidbinbilla was one of three research sites in the ACT where specially constructed kangaroo graze-down enclosures were used to develop an ecological model of the interactions between weather, kangaroos and vegetation, which can be used to guide kangaroo management strategies (Fletcher 2006; ACT Government 2010b). The effects of kangaroo grazing at Tidbinbilla on both the grassland flora and two species of ground-nesting birds have been documented by Neave and Tanton (1989). The wingless Key's matchstick grasshopper which occurs in *Themeda* grasslands near Gibraltar Peak saddle has been the subject of extensive genetic research (Peacock and McCann 1994; Rowell and Crawford 1995). As noted above (s. 10.3), regular spotlight monitoring is carried out at Tidbinbilla to assess abundance of pest animals.

Extensive studies have been undertaken of the vegetation of Tidbinbilla, including: survey, analysis and mapping (Ingwersen 1983, 1985b, Ward and Ingwersen 1988); research into the biology of grasstrees (Gill and Ingwersen 1976) and management recommendations (Ormay and Ingwersen 1993); and research on the spread of burgan (Kirschbaum and Williams 1991). Research conducted throughout the Australian Alps (ACT Government 2010a; Zylstra 2006) is relevant to understanding fire ecology at Tidbinbilla (s. 6.10) and developing fire management strategies (s. 11.1).

The birds of Tidbinbilla are well known through the records of the Canberra Ornithologists Group and the ACT Bird Atlas (Taylor and COG 1992). Robinson and Frith made detailed observations on the behaviour and song of superb lyrebirds on the eastern slopes of Mt Tidbinbilla mostly between 1962 and 1965 (Frith 1976; Robinson and Frith 1981). These were pioneering bio-acoustic studies exploring lyrebird song structure and the role of mimicry. The lyrebirds continue to be monitored and their song recorded (Fullagar 2008). The Tidbinbilla River and tributary streams such as Reid, Hurdle, Ashbrook and Mountain creeks are flowing streams when not in drought conditions. The fish fauna has been surveyed showing that the streams supported introduced brown and rainbow trout and the native mountain galaxias (Rutzou et al. 1994). The only comprehensive survey of the fauna of TNR (excluding birds) is the unpublished work of Ormay (1982). The last record of a brush-tailed rock wallaby in the wild in the ACT is from the area that is now Tidbinbilla Nature Reserve (Ormay 1996).

Prehistory and History

The history of the human presence in the Tidbinbilla area has also attracted survey and research effort, though this is not comprehensive. There is some mention of the interactions between Aboriginal people and Europeans during the period of the pastoral advance in the 19th century (e.g. Bluett 1954; Wright 1923). The most important documentation of the Aboriginal presence came from scientific archaeological research in the 1970s and 1980s, which dated Aboriginal occupation of the area to 21 000 years ago (Flood 1973, 1980, n.d.; Flood et al. 1987). Tidbinbilla is an important site in the scientific study of the prehistory of Australia, being one of the sites that dated Aboriginal occupation back to the Pleistocene, at the time of the last glacial maximum (Mulvaney and Kamminga 1999). Further archaeological research is required, especially of the rock shelters in Jedbinbilla.

Many of those who used to live in the Tidbinbilla Valley and their descendants have strong associations with the area, and Tidbinbilla features in research on the history of the ACT and the mountain regions in particular (Higgins 2009). These associations have resulted in some histories of the families in the valley and the activities that occurred there e.g. Green and Hatcliffe families (Flint 1983); Gibraltar School (Fisher 1996); Czechoslovakian eucalyptus oil distillers (Green 1999); Tidbinbilla settlement (Higgins 1995). The Tidbinbilla Pioneers Association is active in documenting the history of the area.

Surveys and research reports commissioned for Tidbinbilla are also important in providing foundations for management of the area. Bulbeck and Boot (1991) prepared a comprehensive cultural resource survey and conservation plan which included both Aboriginal and European cultural heritage. There are a number of reports documenting the Aboriginal cultural heritage including *Vol. 7 of Sites of Significance in the ACT* (NCPA 1990); the resurvey of Jedbinbilla after the 2003 bushfire (Barber et al. 2004); road surveys e.g. Barber (2001); and investigations of particular areas e.g. Barber and Williams (1996). Cultural heritage research also forms part of conservation management plans for historic places e.g. Freeman Collett and Partners and Higgins (1994) for Nil Desperandum.

Visitor Information

There is a range of visitor data for Tidbinbilla Nature Reserve collected over many years including visitor numbers, origins of visitors and activities undertaken while visiting the reserve. Much of this data has been collected indirectly and incompletely. Birrigai at Tidbinbilla also maintains visitor data obtained as a necessary part of its operation. Tidbinbilla Nature Reserve is included in usage and satisfaction surveys of ACT sportsgrounds, parks and open spaces (2007–8; 2008–9), which provide valuable feedback to management on facilities provided and responses to publicity about Tidbinbilla (MARS 2008, 2009).

SURVEY, MONITORING AND RESEARCH

OBJECTIVES

- **Survey, monitoring and research make important contributions to the effective and strategic management of Tidbinbilla.**
- **Through partnerships with research institutions, Tidbinbilla facilitates and participates in research related to its values, functions, and operation.**

POLICIES

- Survey, monitoring and research in Tidbinbilla that assists in building the knowledge and understanding for professional reserve management will be planned, undertaken, encouraged and supported.
- Proposed research projects at Tidbinbilla will be assessed to determine their benefits to management, potential environmental and social impacts, and the management arrangements necessary to carry out the project.
- As far as practicable, knowledge about Tidbinbilla deriving from survey, monitoring and research will be disseminated to researchers, other government agencies, regional partners and the community through publications, web-based media and other forms of communication.

ACTIONS

- Pursue opportunities for collaborative research with Australian Alps national parks agencies, research institutions, other government agencies and community groups.
- Facilitate and support threatened species research, especially in relation to species that are held, or there is the capability to hold, at Tidbinbilla.
- Facilitate and support research into the natural and cultural values of Tidbinbilla.
- Collect visitor data on a regular basis, to inform management decisions.
- Maintain a central repository of information about Tidbinbilla, including the results of research.

Environmental Planning, Protection and Management



Sustainable environmental management needs to be part of the daily operations of protected area management. Managers have the responsibility to address environmental issues, provide leadership, and be accountable to the community.

Protected Area Management: Principles and Practice (Worboys et al. 2005)

Chapters 6 to 10 have outlined management of Tidbinbilla to conserve the values identified in Chapter 2. Chapter 11 considers a number of other management issues, functions and requirements. These also support the conservation of reserve values to varying degrees. While the chapter focuses on the responsibilities of the managing agency, the concept of environmental stewardship applies to all those individuals and organisations that have an involvement with Tidbinbilla.

11.1 Fire Management

The *Emergencies Act 2004* is the primary legislative authority for bushfire management in the ACT and provides for development of a Strategic Bushfire Management Plan (SBMP) (ACT ESA 2009a). As far as practicable, land managers must ensure that land is managed in accordance with the SBMP. Where there is inconsistency between the SBMP and a management plan in force under the *Planning and Development Act 2007*, the management plan shall prevail. There is no inconsistency between the Strategic Bushfire Management Plan and this management plan. The ACT Rural Fire Service and Parks and Conservation are responsible for fire suppression in the Tidbinbilla area, while Parks and Conservation is responsible for all other aspects of fire management.

Under the SBMP a Tidbinbilla Regional Fire Management Plan has been prepared (ACT Government 2009b), which establishes the major fire fuel management, fire access management and fire infrastructure management actions for the next ten years (2009–2019). It accommodates ecological issues arising from the 2003 fires, including the preferred fire regimes for the range of vegetation communities present (see s. 6.10). The plan illustrates areas to be subject to prescribed burning and the timing of that burning. All programmed fuel reduction and fire management measures are to be reviewed in the event of wildfire. More detailed Bushfire Operational Plans, also required under the Emergencies Act, are the means by which land managers put in place bushfire management arrangements for particular land areas. These plans are reviewed every two years.

Outer Asset Protection Zones are defined for the Tidbinbilla Valley and Birrigai (Figure 5.1) which are strips of land adjacent to some inner asset protection zones, where fuel hazard is to be reduced to comparatively low levels to further reduce bushfire intensity and the risk of ember attack to adjacent houses and assets (ACT ESA 2009a). It is likely that large scale, high-intensity fires will occur again in the Tidbinbilla area. This should be a consideration in the design and development of infrastructure and facilities at Tidbinbilla.

FIRE MANAGEMENT

OBJECTIVE

- **Fire is managed at Tidbinbilla so that reserve values, and life and property in the reserve and on neighbouring land, are protected.**

POLICIES

- The Tidbinbilla Regional Fire Management Plan (2009–2019) provides the basis for the management of bushfire risk at Tidbinbilla.
- Lighting of fires is prohibited except in wood barbecues in Zone 3 (Table 8.1).
- Prescribed burning is to be conducted in accordance with the requirements of the *Environment Protection Act 1997*.

ACTIONS

- Prepare and review a Bushfire Operational Plan for Tidbinbilla as part of the annual Bushfire Operational Plan for the Territory and Municipal Services Directorate.
- Carry out fire management works and activities in accordance with the Tidbinbilla Regional Fire Management Plan and the Bushfire Operational Plan.
- Include consideration of bushfire risk in the design and development of infrastructure and facilities at Tidbinbilla.

(See also policies and actions under **Fire Ecology** in s. 6.10.)

11.2 Environmental Impact Assessment

Requirements for environmental assessment for works or developments in the ACT are contained in the *Planning and Development Act 2007*. Schedule 4 lists activities requiring assessment (Part 4.2) and specifies that any 'proposal with the potential to have a significant impact on the management objectives for land reserved under section 315 for the purpose of a wilderness area, national park, nature reserve or special purpose reserve' will require an environmental impact assessment. It is preferable that environmental considerations be part of the early stages of project formulation (an environmental planning approach). Where a number of projects are planned, it is desirable to address these collectively in order to determine cumulative impacts.

As noted in Chapter 3, the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) has applicability to Tidbinbilla Nature Reserve due to its inclusion in the National Heritage List. The Commonwealth and ACT governments have a bilateral agreement under the EPBC Act in relation to environmental impact assessment (DEWHA 2009b).

ENVIRONMENTAL IMPACT ASSESSMENT

OBJECTIVE

- **Environmental assessments are conducted for any proposed works or developments in the reserve resulting in due consideration and protection of reserve values.**

POLICIES

- Appropriate levels of environmental assessment will be undertaken for works planned for the reserve. Wherever relevant, proposed works and developments are to be assessed collectively.
- For minor works that do not trigger legislative requirements, an environmental assessment is to be conducted and appropriate management, preventative and remediation requirements established as part of the planning, design and carrying out of the works.

ACTIONS

- Prepare work plans for all works undertaken in the reserve, which incorporate requirements for environmental protection.
- Ensure that procedures are in place for environmental impact assessments and that staff and contractors are aware of their responsibilities in adhering to the process.

11.3 Management Operations and Environmental Protection

Maintenance of environmental quality is an important consideration in managing Tidbinbilla and is a legislative and government policy requirement. Particular initiatives for sustainable resource management may also be incorporated into the education and research functions of the reserve. Public health and safety must also be considered at Tidbinbilla where there are large numbers of visitors but facilities and services like water supply and sanitation are not provided through urban infrastructure. Part of the role of management is to manage human activities that have the potential to impact on reserve values and visitors e.g. use of firearms.

MANAGEMENT OPERATIONS AND ENVIRONMENTAL PROTECTION

OBJECTIVE

- **Systems for operational management are designed and developed to best-practice standards to maintain the environmental quality of Tidbinbilla and to ensure the health and safety of visitors.**

(a) Water Quality

Hydrology and water quality are considered in s. 6.6. It is important for public health and safety that water quality and appropriate uses of the water are indicated to visitors at the tap.

POLICIES

- The quality of water at the tap in Tidbinbilla will be clearly advised to users, especially visitors.
- Water supplied for drinking purposes is to meet relevant public health standards and guidelines.

ACTION

- Monitor water quality, provide advice on water quality at the tap, and ensure drinking water supplies are of suitable quality.

(b) Water and Energy Use

In line with ACT Government policy (ACT Government 2004a, 2007a), it is desirable for Tidbinbilla to implement efficient systems for the use of energy and water.

POLICY

- Water and energy efficiency principles and technologies will be applied to the design and development of new buildings, reserve infrastructure, landscaping and the retrofitting of buildings.

ACTIONS

- Evaluate the use of renewable energy sources for new and existing infrastructure and facilities at Tidbinbilla.
- Use water and energy efficient equipment, appliances and systems in the management and operation of Tidbinbilla.
- Where practicable, include information about water and energy efficiency principles and technologies in educational materials about Tidbinbilla.

(c) Air Quality

Smoke from prescribed burning and bushfires is the main cause of reduced air quality in the area (see **Fire Management** (above) regarding prescribed burning).

(d) Waste Management

Since the 1990s, public rubbish bins have not been provided at Tidbinbilla and visitors generally accept that they take out their rubbish. This policy will be continued. Appropriate rubbish removal and recycling facilities are established at locations such as the Tidbinbilla Works Depot and at Birrigai at Tidbinbilla related to the operation of those facilities.

(e) Chemicals and Hazardous Materials

Chemicals and hazardous materials are used in the reserve for pest plant and animal control, fire suppression, and in the course of routine management activities. It is the responsibility of managers and contractors to ensure that the requirements of the *Environmental Protection Act 1997* and any subsequent Environmental Authorisations are met as well as occupational health and safety requirements.

POLICIES

- The use of chemicals and hazardous materials at Tidbinbilla will be kept to the minimum required to undertake management functions.
- Chemicals and hazardous materials will be transported, stored, handled and applied in compliance with Australian standards and legislative requirements including those for occupational health and safety and avoidance of pollution.
- The handling and use of chemicals and hazardous materials is to be undertaken only by suitably qualified and trained personnel.
- All operations where there is potential for fuel, oil or chemical spills must have spill kits available and any spillage must be cleaned up as soon as possible. Pollution incidents that could cause environmental damage are to be reported to the ACT Environmental Protection Authority and, in cases of emergency, the ACT Fire Brigade.

ACTIONS

- Ensure that staff and contractors using chemicals and hazardous materials are fully trained in their safe and effective use.
- Advise the public when chemicals and hazardous materials are being used in areas they might visit e.g. use of poison baits.
- Maintain Material Data Safety Sheets for all stored chemicals, which are available to all relevant personnel.

(f) Firearms and Other Weapons

Recreational use of firearms is not permitted at Tidbinbilla. Under the *Nature Conservation Act 1980*, it is also an offence to use or possess other weapons (e.g. bow or arrow) or a trap, net, snare or other device capable of capturing animals, without the written consent of the ACT Conservator of Flora and Fauna. Firearms may be used for management purposes in accordance with prevailing legislation and ACT Government policy including codes of practice.

(g) Domestic Animals

Domestic animals are not allowed in the reserve as they disturb wildlife and may cause conflict between visitors. Guide dogs are permitted.

11.4 Resource Extraction

Resource extraction (especially forest use) is part of the history of the Tidbinbilla Valley. In accordance with the legislative objectives for the reserve, resource extraction is now limited to small-scale use of local soil or gravel for vehicle and walking tracks, the use of groundwater, and the possible use of local materials in interpretation. An example of the latter would be coppicing of trees to demonstrate eucalyptus oil distilling. Local sourcing of road and track material is often preferable to obtaining materials from elsewhere which may bring weeds or pathogens. As noted in s. 10.4, a browse plantation has been established to provide food for the captive koala population. The following activities are prohibited:

- timber cutting and firewood removal (except for management purposes)
- taking rocks, gravel or soil (except for management purposes)
- taking, killing, picking, defacing or otherwise disturbing natural or cultural features (except for purposes authorised by the Conservator e.g. research)
- beekeeping
- livestock grazing (livestock found in the reserve will be removed).

11.5 Access Management

Management policies for access in each of the zones at Tidbinbilla are included in Table 5.2. Given the presence of the wildlife collection and high value facilities (in the Tidbinbilla Valley and at Birrigai at Tidbinbilla) it is very important to ensure the security of Tidbinbilla at night. The maintenance of boundary gates at fire trail entry points is an ongoing management function. Including Gibraltar in the Tidbinbilla precinct allows a boundary to be secured along the Corin Road (s. 5.2).

ACCESS MANAGEMENT
<p>OBJECTIVE</p> <ul style="list-style-type: none"> • Facilities and infrastructure at Tidbinbilla are kept secure and unauthorised access is controlled.
<p>POLICY</p> <ul style="list-style-type: none"> • Maintenance of the security of Tidbinbilla is a high priority for management and will be achieved through design and construction of barriers at entry points, night-time closure, signage and other measures.
<p>ACTIONS</p> <ul style="list-style-type: none"> • Issue guidelines and protocols to authorised users for access to otherwise close management trails. • Strictly manage and monitor the issue of keys for locked gates.

11.6 Law Enforcement

The full range of ACT legislation applies at Tidbinbilla. Fortunately, the majority of infringements committed by visitors are of a minor nature. These are generally dealt with by rangers who are trained in law enforcement and authorised under relevant legislation. All permanent rangers at Tidbinbilla are conservation officers under the *Nature Conservation Act 1980*. Wherever possible a public relations and education approach is adopted to highlight inappropriate behaviour and explain why it is unacceptable. For more serious incidents and those of a criminal nature, law enforcement becomes the responsibility of the Australian Federal Police.

11.7 Implementation of the Management Plan

Management policies and actions in this management plan form the basis for its implementation, primary responsibility for which rests with Tidbinbilla managers. Some policies and actions are focussed more to Tidbinbilla Nature Reserve and Jedbinbilla, others to Birrigai, while many concern the precinct as a whole. Many of the policies and actions are collaborative undertakings that will involve other government agencies, private organisations, schools, universities, commercial interests, adjacent landholders and community groups.

As outlined in the *Purpose and Scope* in Chapter 1, a management plan for Public Land is a legislative requirement and provides structured guidance for the custodian of the land and all those with an interest in the area. The policies and actions comprise a mix of those that tend to be prescriptive and those that recognise the need and allow for varying levels of management flexibility.

11.8 Tidbinbilla Master Plan

The management plan has identified the need for some more detailed or site planning (s. 3.4) beyond what is feasible or appropriate for a management plan to cover. For this purpose, the management plan proposes that a master plan be prepared, which would consider the benefits and feasibility of particular proposals and the preferred location for new or modified facilities and infrastructure. Preparation of a master plan will include early engagement with the community and other stakeholders, and the draft and final master plan will be made publically available, including on the internet, as part of a public consultation process.

Matters for consideration in a master plan include:

- the benefits and feasibility of a relocated entrance for Birrigai (Chapter 8)
- opportunities to integrate Birrigai's education activities into Tidbinbilla as a whole (Chapter 9)
- the benefits and feasibility of establishing an education centre at Tidbinbilla in association with the Wildlife Precinct (Chapter 9)
- future uses for the veterinary centre building located in the Sanctuary (Chapter 10)
- potential locations in the Special Purpose Reserve part of Zone 3 for overnight accommodation options including a car-camping area and/or 'eco-lodges' or 'eco-cabins' (a proposed separate investigation) (Chapter 8)
- the importance at a detailed level of the landscape components of the Tidbinbilla Valley in relation to objectives for managing burrgan (Chapter 6)
- the location of suitable cycling routes in the Tidbinbilla precinct (Chapter 8)
- the establishment of Rock Valley Homestead as a focal point for interpretation of European cultural heritage (Chapter 7)
- determination of suitable sites for special events at Tidbinbilla (Chapter 8)
- the location of walking tracks and additional visitor facilities, particularly considering access for visitors with limited mobility or disabilities, and for young children i.e. stroller friendly. (Chapter 8)
- the wildlife collection facilities (Chapter 10)
- landscaping, including types of planting.

Delineation of sites, locations and routes of all of the above would have to take account of the zoning system for Tidbinbilla, the values of Tidbinbilla and the management policies outlined in this management plan. Particular attention needs to be given to maintaining the security of the area to protect its infrastructure and wildlife collection, and the implications for reserve management and visitors of proposals and options.

TIDBINBILLA MASTER PLAN

ACTION

- Prepare a master plan to detail site planning, including facilities, for Tidbinbilla.

Appendix 6 contains a consolidated list of actions to which priorities have been attached. This forms the basis to plan and undertake actions in the management plan and to assess progress with their implementation.

Appendices



APPENDIX 1

ACT Planning and Land Management Context

ACT: Land Ownership, Management and Planning

The land comprising the ACT was acquired by the Commonwealth from New South Wales under the *Seat of Government Acceptance Act 1909* (Cwlth). Under the Australian Constitution, the Commonwealth remains the owner of the land in the ACT, even after the granting of self government, under the *Australian Capital Territory (Self Government) Act 1988* (Cwlth).

The *Australian Capital Territory (Planning and Land Management) Act 1988* (Cwlth) provides for two categories of land in the ACT:

- **National Land:** land used by or on behalf of the Commonwealth and managed by the Commonwealth.
- **Territory Land:** all the remaining land of the ACT, which is managed by the ACT Government on behalf of the Commonwealth.

The *Australian Capital Territory (Planning and Land Management) Act 1988* provides for a planning regime for the ACT at two levels:

- **The National Capital Plan:** the object of which is to 'ensure that Canberra and the Territory are planned and developed in accordance with their national significance'. The *National Capital Plan* contains general policies for land use and development throughout the Territory. The plan also defines *Designated Areas*, which are areas having the special characteristics of the National Capital, and is the planning document for those areas. The plan is administered by the National Capital Authority.
- **The Territory Plan:** the object of which is to 'ensure, in a manner not inconsistent with the National Capital Plan, the planning and development of the Territory to provide the people of the Territory with an attractive, safe and efficient environment in which to live and work and have their recreation'. The *Territory Plan* has no effect to the extent that it is inconsistent with the *National Capital Plan*. The plan is administered by the ACT Planning and Land Authority.

Note that details for the establishment of an ACT planning and land authority and for the contents of a Territory Plan are contained in ACT legislation: the *Planning and Development Act 2007*.

The National Capital Plan contains (p. 106):

- a **principle** for the National Capital Open Space System (NCOSS):
'The National Capital Open Space System (NCOSS) is required to protect the nationally significant open-space framework, visual backdrop and landscape setting for the National Capital. NCOSS will blend city and country in a way that symbolises the character of the national capital and provides a balanced range of uses which reinforces the natural, cultural, scenic and recreational values of the ACT.'
- **policies** for the National Capital Open Space System, which cover protection of environmental qualities and natural and cultural values; provision of educational, cultural and recreational opportunities; assessment of the location of public utilities and roads to minimise impact on the area's values; and preparation of plans of management

At a more detailed level, the *National Capital Plan* contains (p. 118):

- a **principle** for Mountains and Bushland:
'The Mountain and Bushland area is to be maintained as an important visual background to the national capital; to protect both its nature conservation values and Canberra's existing and future water supply and to develop appropriate national capital and tourist uses, particularly in the Tidbinbilla/Paddy's River area.'

- **policies** for Mountains and Bushland, in particular:

‘The area comprising Tidbinbilla Nature Reserve, Bullen Range, Paddy’s River, and Gibraltar Creek should be used for appropriate National Capital and tourist uses consistent with protection of the area’s natural, cultural and rural resources. This area should be protected and used as an important transition and open space system linking urban Canberra and the remote mountain and bushland area.’
- a range of **permitted uses**.

The Territory Plan contains (Vol. 1):

- **Principles** for sustainable development (s. 2.1).
- **Zone Objectives and Development Tables** for the NUZ5 – Mountains and Bushland Zone (s. 9.1). These objectives include protection of water supply, ecological resources, natural and cultural heritage and their landscape context; maintenance of the visual backdrop to Canberra; use of the area for appropriate environmental education, research and scientific study; maintaining and enhancing the scenic and landscape character and ensuring any development is unobtrusive and compatible with its surroundings and the intrinsic landscape qualities of the mountains and bushlands.
- **Non-Urban Zones Development Code** (s. 9.2).

Reserved Land in the ACT

Reservation of Territory Land in the ACT for public use is provided for in ACT legislation and is defined spatially in the *Territory Plan*. This reserved land is termed Public Land and the different types of Public Land Reserve are shown as ‘overlays’ in the Territory Plan Map.

Under the *Planning and Development Act 2007* (s. 315), Public Land may be reserved in the *Territory Plan* for ten different purposes. These are: wilderness area; national park; nature reserve; special purpose reserve; urban open space; cemetery or burial ground; protection of water supply; lake; sport and recreation reserve; heritage area. The Act defines management objectives for each of these Public Land types. Important provisions relating to Public Land under the *Planning and Development Act* are:

- An area of Public Land must be managed in accordance with:
 - (a) the management objectives in the Act that apply to the area
 - (b) a plan of management for the area.

(s. 316)
- The Conservator of Flora and Fauna may determine management objectives for an area of Public Land. (Note that if there is an inconsistency between these objectives and the ones stated in the Act, the ones stated by the Conservator must be read subject to those in the Act) (s. 317).
- If there is an inconsistency in the application of two objectives stated in the Act for an area of Public Land, the second objective is to be read subject to the earlier objective (s. 317).
- The custodian for an area of Public Land must prepare a draft plan of management for the area (s. 320) that sets out how management objectives prescribed in the Act (Schedule 3) are to be pursued (see **Glossary**: custodian).
- A plan of management must include a description of the area of Public Land to which it applies and how the management objectives for the area are to be implemented or promoted in the area (s. 319).
- After progressing through its draft stage, public comment, revision, and preparation of the final plan, a plan of management is a ‘disallowable instrument’ which must be presented to the ACT Legislative Assembly. Subject to any disallowance, the plan commences after the 6th sitting day after the day the plan is presented to the Assembly. The plan is therefore a statutory document, being established under the *Planning and Development Act 2007*.
- The custodian of an area of Public Land must review the plan of management at least once every ten years (s. 332).

APPENDIX 2

A Brief History of the Planning and Management of Tidbinbilla Nature Reserve

(Based primarily on ACT Government 1999a; Bulbeck and Boot 1991; and Ingwersen n.d.)

The origins of Tidbinbilla trace back to 1936 when land was set aside, following interest in establishing a 'reserve' of some kind with a 'scientific station'. Timber reserves had been declared between the Tidbinbilla Valley and Pierces Creek, as well as Tidbinbilla Peak Trig Reserve, in the 1890s when the area was still part of New South Wales. The southern timber reserve formed the basis of the 1936 reserve. Based on planning by the Institute of Anatomy, in 1939 the Commonwealth Department of the Interior constructed a koala enclosure near Hurdle Creek (close to Nil Desperandum) with the aim of reintroducing a breeding population of koalas to the ACT. A small number of adult koalas are reported to have been introduced in 1939 but with the onset of the Second World War, the project lapsed.

Interest in establishing a fauna reserve was renewed in the late 1950s and early 1960s by which time rural settlement in the Tidbinbilla area was in a state of flux, the urban population of Canberra was growing, the modern conservation movement was beginning to establish and there was scientific support. There was also concern about the possibility of pine plantations being established throughout the Tidbinbilla Valley. The Commonwealth Government approved the establishment of a fauna reserve in 1962. This was supported by the Department of the Interior, the Royal Society of Canberra, the CSIRO and the recently formed National Parks Association of the ACT. By mid-1964 most of the reserve had been acquired compulsorily for a 'national park and fauna reserve'.

The land in the valley floor and foot-slopes had been used for farming and grazing for more than a century and early management attention was directed to 'cleaning up, restoration and rehabilitation'. While little effort was made to attract visitors, by 1967 the area was reported to be drawing 3000 people per month. A barbecue area, bird-feeding area, hand-made picnic tables and seats, three nature trails, and a large walk-through animal enclosure containing kangaroos and emus had been constructed for visitors (Officers of the Agriculture and Stock Section 1967).

The first overall planning document for the area was *Tidbinbilla Nature Reserve: A General Development Plan* (Margules SR and Associates 1968). This document outlined the purposes of the reserve to be: (a) preservation of natural flora and fauna; (b) public education; (c) public recreation; and (d) serious study. These formed the basis for management directions in the following decades. In 1969, the first wildlife display was introduced at the reserve and this was to be a feature of Tidbinbilla that set it apart from other conservation reserves in the ACT. The reserve was gazetted as a Public Park in 1971.

Over the next two decades facilities such as a Visitor Information Centre, works depot and staff accommodation were constructed. Staff became increasingly involved in nature conservation, captive wildlife management, construction of walking tracks and nature trails. While a range of documents were produced related to management, no comprehensive management plan was prepared. By the 1980s, the role and function of Tidbinbilla was the subject of debate. Broadly, the two opposing concepts were: (a) that captive wildlife had no place in a nature reserve; and (b) that a national attraction could be built at Tidbinbilla based on more traditional zoo displays.

In 1989, TNR was gazetted as a Nature Reserve under the *Nature Conservation Act 1980*. This was superseded by the provisions of the *Land (Planning and Environment) Act 1991*, which set out categories of reserved Public Land in the ACT and also contained requirements for management plans (transferred from the Nature Conservation Act). The lands of TNR were placed in Public Land categories of National Park and Special Purpose Reserve in the *Territory Plan*, first released in 1993. By the late 1990s a range of works were proposed to upgrade and rejuvenate TNR, framed within a draft management plan (ACT Landscape 1997). The final management plan was released in 1999 and some of this work was undertaken (albeit in modified form).

Post-fire planning and recovery after the 2003 bushfire and the planning and land management context for this revision of the Tidbinbilla Plan of Management are contained in Chapter 1 and Appendix 1.

APPENDIX 3

Vegetation Communities

Vegetation communities at Tidbinbilla; based on the map *Tidbinbilla Nature Reserve Vegetation* (Ingwersen 1985a) and explanatory notes to accompany the map (Ingwersen 1985b); extrapolated to include Jedbinbilla, Gibraltar and Birrigai (ACT Government 2004b); and related to a revised ACT vegetation community classification (Sharp et al. 2007).

Landscape position (Ingwersen1985)	Alt. Range (m)	Community (Ingwersen 1985)	Community (Sharp et al. 2007)
Communities of the lower slopes and valley floor	820-1070	<i>Eucalyptus fastigata</i>	<i>E. fastigata</i> Montane Forest (Brown Barrel Montane Forest)
	820-1070	<i>Eucalyptus robertsonii</i>	<i>E. robertsonii</i> - <i>E. viminalis</i> Montane Forest (Narrow-leaved Peppermint - Ribbon Gum Montane Forest)
	760-1070	<i>Eucalyptus robertsonii</i> - <i>E. dives</i> - <i>E. viminalis</i>	<i>E. robertsonii</i> - <i>E. viminalis</i> Montane Forest (Narrow-leaved Peppermint - Ribbon Gum Montane Forest)
	920-1220	<i>Eucalyptus bridgesiana</i> - <i>E. dives</i>	<i>E. dives</i> - <i>E. bridgesiana</i> Tableland Woodland (Broad-leaved Peppermint - Apple Box Tableland Woodland)
	680-780	<i>Eucalyptus melliodora</i> - <i>E. blakelyi</i> ¹	<i>E. melliodora</i> - <i>E. blakelyi</i> Tableland Grassy Woodland (Yellow Box - Blakely's Red Gum Tableland Grassy Woodland)
Communities of the northern valley slopes	920-1220	<i>Eucalyptus dives</i>	<i>E. dives</i> - <i>E. bridgesiana</i> Tableland Woodland (Broad-leaved Peppermint - Apple Box Tableland Woodland)
	920-1220	<i>Eucalyptus rossii</i> - <i>E. macrorhyncha</i> - <i>E. mannifera</i>	<i>E. macrorhyncha</i> - <i>E. rossii</i> Tableland Forest (Red Stringybark - Scribbly Gum Tableland Forest)
	900 - 1150	<i>Eucalyptus dives</i> - <i>E. mannifera</i>	<i>E. macrorhyncha</i> - <i>E. rossii</i> Tableland Forest (Red Stringybark - Scribbly Gum Tableland Forest)
	730-970	<i>Eucalyptus dives</i> - <i>E. bridgesiana</i> - <i>E. nortonii</i>	<i>E. dives</i> - <i>E. bridgesiana</i> Tableland Woodland (Broad-leaved Peppermint - Apple Box Tableland Woodland)
Communities of subalpine slopes	1220-1600	<i>Eucalyptus pauciflora</i>	<i>E. pauciflora</i> Subalpine Woodland (Snow Gum Subalpine Woodland)
Communities of upper central and southern valley slopes	1100-1300	<i>Eucalyptus dalrympleana</i> - <i>E. dives</i> <hr/> <i>Eucalyptus dalrympleana</i> - <i>E. pauciflora</i>	<i>E. dalrympleana</i> Montane Forest (Mountain Gum Montane Forest)
	1350-1450	<i>Eucalyptus delegatensis</i>	<i>E. delegatensis</i> Montane Tall Forest (Alpine Ash Montane Tall Forest)

Communities of herbaceous species, teatree and grass trees derived from cleared forests	720-1600	<i>Leptospermum</i> community	<i>Kunzea ericoides</i> Tableland Shrubland (Burgan Tableland Shrubland), <i>Calytrix tetragona</i> Montane Shrubland (Common Fringe Myrtle Montane Shrubland)
	700-1600	Grassland	<i>Themeda triandra</i> - <i>Austrodanthonia caespitosa</i> <i>Austrostipa bigeniculata</i> Tableland Dry Tussock Grassland (Kangaroo Grass - Wallaby Grass - Spear Grass Tableland Dry Tussock Grassland), <i>Poa labillardieri</i> Tableland Wet Tussock Grassland (River Tussock Tableland Wet Tussock Grassland), <i>Poa sieberiana</i> Montane Dry Tussock Grassland (Snow Grass Montane Dry Tussock Grassland), <i>Carex gaudichaudiana</i> Montane Wet Tussock Grassland (Fen Sedge Montane Wet Tussock Grassland), <i>Poa costiniana</i> Subalpine Tussock Grassland (Bog Snow Grass Subalpine Tussock Grassland)
Other vegetation			
<ul style="list-style-type: none"> • Native and exotic species planted or otherwise established in valley and footslope areas and natural regeneration of those species. • Pine wildings in Jedbinbilla and Gibraltar. 			

Notes: ¹ Occurs in eastern part of Birrigai (ACT Government 2004b)

APPENDIX 4

Tidbinbilla Fauna: Species Lists

Wild Native Animals Naturally Occurring at Tidbinbilla (excluding birds)

Common Name	Scientific Name
Native Mammals	
short-beaked echidna	<i>Tachyglossus aculeatus</i>
platypus	<i>Ornithorhynchus anatinus</i>
brown antechinus	<i>Antechinus stuartii</i>
dusky antechinus	<i>Antechinus swainsonii</i>
spotted-tailed quoll	<i>Dasyurus maculatus</i>
water rat	<i>Hydromys chryogaster</i>
bush rat	<i>Rattus fuscipes</i>
common wombat	<i>Vombatus ursinus</i>
feathertail glider	<i>Acrobates pygmaeus</i>
eastern pygmy-possum	<i>Cercartetus nanus</i>
sugar glider	<i>Petaurus breviceps</i>
yellow-bellied glider	<i>Petaurus australis</i>
greater glider	<i>Petauroides volans</i>
common ringtail possum	<i>Pseudocheirus peregrinus</i>
common brushtail possum	<i>Trichosurus vulpecula</i>
eastern grey kangaroo	<i>Macropus giganteus</i>
common wallaroo	<i>Macropus robustus</i>
red-necked wallaby	<i>Macropus rufogriseus</i>
swamp wallaby	<i>Wallabia bicolor</i>
dingo	<i>Canis familiaris dingo</i>
chocolate wattled bat	<i>Chalinolobus morio</i>
Gould's wattled bat	<i>Chalinolobus gouldii</i>
eastern false pipistrelle	<i>Falsistrellus tasmaniensis</i>
grey-headed flying fox	<i>Pteropus poliocephalus</i>
white-striped free-tail bat	<i>Nyctonomus australis</i>
lesser long-eared bat	<i>Nyctophylus geoffroyi</i>
Gould's long-eared bat	<i>Nyctophylus gouldi</i>
large forest bat	<i>Vespandelus darlingtoni</i>
southern forest bat	<i>Vespandelus regulus</i>
little forest bat	<i>Vespandelus vulturnus</i>
Amphibians	
common eastern froglet	<i>Crinia signifera</i>
eastern banjo frog	<i>Limnodynastes dumerilii</i>
spotted grass frog	<i>Limnodynastes tasmaniensis</i>
Lesueur's frog	<i>Litoria lesueri</i>
Verreaux's tree frog	<i>Litoria verreauxii</i>
Peron's tree frog	<i>Litoria peronii</i>
brown toadlet	<i>Pseudophryne bibronii</i>
red groined toadlet	<i>Uperoleia laevigata</i>

Common Name	Scientific Name
Fish	
mountain galaxias	<i>Galaxias olidus</i>
Reptiles	
long-necked tortoise	<i>Chelodina longicollis</i>
mountain dragon	<i>Amphibolurus diemensis</i>
jacky lizard	<i>Amphibolurus muricatus</i>
red-throated skink	<i>Bassiana platynota</i>
three-lined skink	<i>Bassiana duperreyi</i>
four-fingered skink	<i>Carlia tetradactyla</i>
robust skink	<i>Ctenotus robustus</i>
Cunningham's skink	<i>Egernia cunninghami</i>
black rock skink	<i>Egernia saxatilis</i>
White's skink	<i>Egernia whitii</i>
highland water skink	<i>Eulamprus tympanum</i>
Heatwoles's water skink	<i>Eulamprus heatwolei</i>
three-toed skink	<i>Hemiergis decresiensis</i>
Maccoy's skink	<i>Hemiergis maccoyi</i>
delicate skink	<i>Lampropholis delicata</i>
spotted grass skink	<i>Lampropholis guichenoti</i>
eastern water dragon	<i>Physignathus lesueurii</i>
bearded dragon	<i>Pogona barbatus</i>
Coventry's skink	<i>Pseudemoia coventryi</i>
Entrecasteaux's skink	<i>Pseudemoia entrecasteauxii</i>
Spencer's skink	<i>Pseudemoia spenceri</i>
blotched blue-tongue lizard	<i>Tiliqua nigrolutea</i>
eastern blue-tongue lizard	<i>Tiliqua scincoides</i>
lace monitor	<i>Varanus varius</i>
highland copperhead	<i>Austrelaps ramsayi</i>
white-lipped snake	<i>Drysdalia coronoides</i>
mainland tiger snake	<i>Notechis scutatus</i>
red-bellied black snake	<i>Pseudechis porphyriacus</i>
eastern brown snake	<i>Pseudonaja textilis</i>
blind snake	<i>Ramphotyphlops nigrescens</i>
Significant invertebrates	
Bogong moth	<i>Agrostis infusa</i>
Key's matchstick grasshopper	<i>Keyacris scurra</i>
small spiny crayfish	<i>Euastacus crassus</i>

Birds

Based on Taylor and COG (1992) and lists supplied by Tidbinbilla Nature Reserve. List includes migratory and uncommon species.

Common name	Scientific Name
Large birds	
emu	<i>Dromaius novaehollandiae</i>
Grebes	
hoary-headed grebe	<i>Poliiocephalus poliocephalus</i>
Australasian grebe	<i>Tachybaptus novaehollandiae</i>
Cormorants	
little pied cormorant	<i>Microcarbo melanoleucos</i>
Hérons	
white-faced heron	<i>Egretta novaehollandiae</i>
Ibis	
Australian white ibis	<i>Threskiornis molucca</i>
Swans, geese, shelducks	
black swan	<i>Cygnus atratus</i>
Cape Barren Goose	<i>Cereopsis novaehollandiae</i>
Australian shelduck	<i>Tadorna tadornoides</i>
Ducks	
Australian wood duck	<i>Chenonetta jubata</i>
Pacific black duck	<i>Anas superciliosa</i>
Australasian shoveler	<i>Anas rhynchotis</i>
grey teal	<i>Anas gracilis</i>
chestnut teal	<i>Anas castanea</i>
hardhead	<i>Aythya australis</i>
pink-eared duck	<i>Malacorhynchus membranaceus</i>
musk duck	<i>Biziura lobata</i>
freckled duck	<i>Stictonetta naevosa</i>
magpie goose	<i>Anseranas semipalmata</i>
blue-billed duck	<i>Oxyura australis</i>
Raptors	
brown goshawk	<i>Accipiter fasciatus</i>
collared sparrowhawk	<i>Accipiter cirrocephalus</i>
wedge-tailed eagle	<i>Aquila audax</i>
black-shouldered kite	<i>Elanus axillaris</i>
little eagle	<i>Hieraaetus morphnoides</i>
peregrine falcon	<i>Falco peregrinus</i>
Australian hobby	<i>Falco longipennis</i>
brown falcon	<i>Falco berigora</i>
nankeen kestrel	<i>Falco cenchroides</i>
swamp harrier	<i>Circus approximans</i>
Quail	
stubble quail	<i>Coturnix pectoralis</i>
painted button-quail	<i>Turnix varius</i>
brown quail	<i>Coturnix ypsilophora</i>

Common name	Scientific Name
Crakes, rails	
Lewin's rail	<i>Lewinia pectoralis</i>
spotless crake	<i>Porzana tabuensis</i>
Gallinules	
dusky moorhen	<i>Gallinula tenebrosa</i>
Eurasian coot	<i>Fulica atra</i>
Plovers	
masked lapwing	<i>Vanellus miles</i>
Pigeons	
common bronzewing	<i>Phaps chalcoptera</i>
wonga pigeon	<i>Leucosarcia picata</i>
Cockatoos	
yellow-tailed black-cockatoo	<i>Calyptorhynchus funereus</i>
gang-gang cockatoo	<i>Callocephalon fimbriatum</i>
galah	<i>Eolophus roseicapillus</i>
sulphur-crested cockatoo	<i>Cacatua galerita</i>
Parrots, rosellas	
Australian king-parrot	<i>Alisterus scapularis</i>
crimson rosella	<i>Platycercus elegans</i>
eastern rosella	<i>Platycercus eximius</i>
red-rumped parrot	<i>Psephotus haematonotus</i>
Cuckoos	
fan-tailed cuckoo	<i>Cacomantis flabelliformis</i>
Horsfield's bronze-cuckoo	<i>Chalcites basalis</i>
shining bronze-cuckoo	<i>Chalcites lucidus</i>
pallid cuckoo	<i>Cacomantis pallidus</i>
brush cuckoo	<i>Cacomantis variolosus</i>
Kookaburras	
laughing kookaburra	<i>Dacelo novaeguineae</i>
Kingfishers, bee-eaters	
sacred kingfisher	<i>Todiramphus sanctus</i>
rainbow bee-eater	<i>Merops ornatus</i>
Owls, frogmouths, owlet-nightjars	
powerful owl	<i>Ninox strenua</i>
southern boobook	<i>Ninox novaeseelandiae</i>
tawny frogmouth	<i>Podagurs strigoides</i>
Australian owlet-nightjar	<i>Aegotheles cristatus</i>
Swifts, swallows, martins	
white-throated needletail	<i>Hirundapus caudacutus</i>
welcome swallow	<i>Hirundo neoxena</i>
tree martin	<i>Petrochelidon nigricans</i>
fairy martin	<i>Petrochelidon ariel</i>

Common name	Scientific Name
Ground-thrushes	
bassian thrush	<i>Zoothera lunulata</i>
Larks, pipits	
Richard's pipit	<i>Anthus novaeseelandiae</i>
rufous songlark	<i>Cincloramphus mathewsi</i>
Cuckoo-shrikes	
black-faced cuckoo-shrike	<i>Coracina novaehollandiae</i>
Trillers, bulbuls	
white-winged triller	<i>Lalage sueurii</i>
cicadabird	<i>Coracina tenuirostris</i>
Robins	
scarlet robin	<i>Petroica boodang</i>
flame robin	<i>Petroica phoenicea</i>
rose robin	<i>Petroica rosea</i>
hooded robin	<i>Melanodryas cucullata</i>
eastern yellow robin	<i>Eopsaltria australis</i>
Shrike-tits, whistlers	
crested shrike-tit	<i>Falcunculus frontatus</i>
olive whistler	<i>Pachycephala olivacea</i>
golden whistler	<i>Pachycephala pectoralis</i>
rufous whistler	<i>Pachycephala rufiventris</i>
Shrike-thrush	
grey shrike-thrush	<i>Colluricincla harmonica</i>
Monarch flycatchers	
leaden flycatcher	<i>Myiagra rubecula</i>
satin flycatcher	<i>Myiagra cyanoleuca</i>
restless flycatcher	<i>Myiagra inquieta</i>
Fantails	
rufous fantail	<i>Rhipidura rufifrons</i>
grey fantail	<i>Rhipidura albiscapa</i>
willie wagtail	<i>Rhipidura leucophrys</i>
Whipbirds	
eastern whipbird	<i>Psophodes olivaceus</i>
Quail-thrushes	
spotted quail thrush	<i>Cinclosoma punctatum</i>
Warblers	
little grassbird	<i>Megalurus gramineus</i>
clamorous reed-warbler	<i>Acrocephalus stentoreus</i>
Cisticolas	
golden-headed cisticola	<i>Cisticola exilis</i>
Fairy-wrens	
superb fairy-wren	<i>Malurus cyaneus</i>
Scrubwrens	
white-browed scrubwren	<i>Sericornis frontalis</i>
pilotbird	<i>Pycnoptilus floccosus</i>
Gerygones	
white-throated gerygone	<i>Gerygone albogularis</i>

Common name	Scientific Name
Thornbills	
brown thornbill	<i>Acanthiza pusilla</i>
striated thornbill	<i>Acanthiza lineata</i>
buff-rumped thornbill	<i>Acanthiza reguloides</i>
yellow-rumped thornbill	<i>Acanthiza chrysorrhoa</i>
weebill	<i>Smicronis brevirostris</i>
Sitellas, treecreepers	
varied sitella	<i>Daphoenositta chrysoptera</i>
white-throated treecreeper	<i>Cormobates leucophaea</i>
red-browed treecreeper	<i>Climacteris erythroptis</i>
Wattlebirds	
red wattlebird	<i>Anthochaera carunculata</i>
Friarbirds	
noisy friarbird	<i>Philemon corniculatus</i>
Honeyeaters	
yellow-faced honeyeater	<i>Lichenostomus chrysops</i>
white-eared honeyeater	<i>Lichenostomus leucotis</i>
white-naped honeyeater	<i>Melithreptus lunatus</i>
fuscous honeyeater	<i>Lichenostomus fuscus</i>
white-plumed honeyeater	<i>Lichenostomus penicillatus</i>
brown-headed honeyeater	<i>Melithreptus brevirostris</i>
crescent honeyeater	<i>Phylidonyris pyrrhopterus</i>
New Holland honeyeater	<i>Phylidonyris novaehollandiae</i>
eastern spinebill	<i>Acanthorhynchus tenuirostris</i>
White-eyes, flowerpeckers	
mistletoebird	<i>Dicaeum hirundinaceum</i>
silveryeye	<i>Zosterops lateralis</i>
Pardalotes	
spotted pardalote	<i>Pardalotus punctatus</i>
striated pardalote	<i>Pardalotus striatus</i>
Firetails	
red-browed finch	<i>Neochmia temporalis</i>
diamond firetail	<i>Stagonopleura guttata</i>
Orioles	
olive-backed oriole	<i>Oriolus sagittatus</i>
Mud-nest builders	
white-winged chough	<i>Corcorax melanorhamphos</i>
magpie-lark	<i>Grallina cyanoleuca</i>
Woodswallows	
white-browed woodswallow	<i>Artamus superciliosus</i>
dusky woodswallow	<i>Artamus cyanopterus</i>

Common name	Scientific Name
Butcherbirds	
grey butcherbird	<i>Cracticus torquatus</i>
Currawongs	
pie currawong	<i>Strepera graculina</i>
grey currawong	<i>Strepera versicolor</i>
Magpies	
Australian magpie	<i>Cracticus tibicen</i>
Bowerbirds	
satin bowerbird	<i>Ptilonorhynchus violaceus</i>
Lyrebirds	
superb lyrebird	<i>Menura novaehollandiae</i>
Ravens	
Australian raven	<i>Corvus coronoides</i>
little raven	<i>Corvus mellori</i>
Introduced species	
rock dove	<i>Columba livia</i>
Eurasian skylark	<i>Alauda arvensis</i>
common blackbird	<i>Turdus merula</i>
European goldfinch	<i>Carduelis carduelis</i>
house sparrow	<i>Passer domesticus</i>
common starling	<i>Sturnus vulgaris</i>

Other Native Animals

Common Name	Scientific Name
Captive: historically recorded at Tidbinbilla	
brush-tailed rock wallaby	<i>Petrogale penicillata</i>
northern corroboree frog	<i>Pseudophryne pengilleyi</i>
Captive: no record of presence in Tidbinbilla area	
koala	<i>Phascolarctus cinereus</i>
eastern bettong	<i>Bettongia gaimardi</i>
Captive: not indigenous to the area	
red kangaroo	<i>Macropus rufus</i>
yellow-footed rock wallaby	<i>Petrogale xanthopus</i>
long-nosed potoroo	<i>Potorous tridactylus</i>
brolga	<i>Grus rubicundus</i>
Australian pelican	<i>Pelecanus conspicillatus</i>
diamond python	<i>Morelia spilota</i>
carpet snake	<i>Morelia spilota verigata</i>
green and gold bell frog	<i>Litoria aurea</i>
Not indigenous to Tidbinbilla	
silver perch	<i>Bidyanus bidyanus</i>
golden perch	<i>Macquaria ambigua</i>
magpie goose	<i>Anseranas semipalmata</i>

Introduced Species

Common Name	Scientific Name
Mammals	
feral dog	<i>Canis lupus familiaris</i>
feral cat	<i>Felis catus</i>
house mouse	<i>Mus musculus</i>
European rabbit	<i>Oryctolagus cuniculus</i>
European brown hare	<i>Lepus capensis</i>
black rat	<i>Rattus rattus</i>
feral pig	<i>Sus scrofa</i>
red fox	<i>Vulpes vulpes</i>
Fish	
rainbow trout	<i>Oncorhynchus mykiss</i>
brown trout	<i>Salmo trutta</i>
Important invertebrate	
European wasp	<i>Vespula germanica</i>

APPENDIX 5

National Heritage Management Principles

National Heritage management principles provide guidance for managing heritage properties to ensure that the values are protected for future generations.

1. The objective in managing National Heritage places is to identify, protect, conserve, present and transmit, to all generations, their National Heritage values.
2. The management of National Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have a significant impact on their National Heritage values.
3. The management of National Heritage places should respect all heritage values and seek to integrate, where appropriate, any Commonwealth, state, territory and local government responsibilities for those places.
4. The management of National Heritage places should ensure that their use and presentation is consistent with the conservation of their National Heritage values.
5. The management of National Heritage places should make timely and appropriate provision for community involvement, especially by people who:
 - a. have a particular interest in, or associations with, the place, and
 - b. may be affected by the management of the place.
6. Indigenous people are the primary source of information on the value of their heritage and the active participation of Indigenous people in identification, assessment and management is integral to the effective protection of Indigenous heritage values.
7. The management of National Heritage places should provide for regular monitoring, review and reporting on the conservation of National Heritage values.

(Source: Managing National Heritage places: <<http://www.environment.gov.au/heritage/about/national/managing.html>>)

APPENDIX 6

Management Actions and Priorities

Notes for the following table:

Priority

(High, Medium, Low) is used in two ways in this table:

- Category 1. For some actions, it indicates the priority that should be given to *undertaking and completing* the action (for example, a High priority action of this type should be undertaken early in the life of the management plan);
- Category 2. For many actions it indicates the priority that should be given to an action *that will remain current across the life of the plan* (in the context of all management activities). These are shown as Ongoing.

Time scales for actions

As a guide the following time scales are appropriate for actions in category 1:

High: Undertaken/completed within three years of completion of this plan.

Medium: Undertaken/completed within five years of completion of this plan.

Low: Undertaken/completed more than five years after completion of this plan.

Sec.	Action	Priority
Chapter 4 Community Involvement		
4.2	Community	
	<ul style="list-style-type: none"> Provide support to community groups that are actively involved with the management of Tidbinbilla. 	Medium Ongoing
	<ul style="list-style-type: none"> Involve community groups in the collection and recording of data for monitoring programs and reporting of results. 	Medium Ongoing
	<ul style="list-style-type: none"> As operational circumstances permit, provide work experience opportunities for individuals, including students and Aboriginal people. 	Low Ongoing
4.3	Corporate Partnerships	
	<ul style="list-style-type: none"> Seek corporate partnerships, sponsorships and donations to support the operation of the wildlife collection, the events and visitor program, and other management activities. 	Medium Ongoing
4.4	Concessions and Commercial Activities	
	<ul style="list-style-type: none"> Investigate and promote opportunities for concessions and commercial activities at Tidbinbilla that enhance the visitor experience and support the area's functions and management objectives. 	Medium Ongoing
4.5	Neighbours	
	<ul style="list-style-type: none"> Undertake to meet with neighbours at least twice a year to discuss land management issues. 	Medium Ongoing
	<ul style="list-style-type: none"> Working with the ACT Rural Fire Service, participate in fire planning and operational programs across reserve and leasehold boundaries. 	High Ongoing
Chapter 6 Natural Values		
6.3	Climate Change	
	<ul style="list-style-type: none"> Incorporate actions contained in the ACT Government's <i>Climate Change Action Plan</i> (ACT Government 2007b) into the management of Tidbinbilla. 	Medium Ongoing
	<ul style="list-style-type: none"> Identify those species and ecological communities most at threat from climate change, establish monitoring programs aimed at tracking and understanding likely changes, and develop management responses that will assist in maintaining those species/ecological communities and allow them to function and evolve. 	Medium

Sec.	Action	Priority
	<ul style="list-style-type: none"> Encourage and support research into the implications of climate change for the biota of the region. 	Low Ongoing
	<ul style="list-style-type: none"> Participate in initiatives to develop and improve ecological connectivity in the Australian Alps and ACT region. 	Low Ongoing
	<ul style="list-style-type: none"> Continue to operate the weather station at Tidbinbilla to provide local, long-term climatic data. 	Medium Ongoing
6.4	<p><u>Landscape</u></p> <ul style="list-style-type: none"> Identify those areas of open grassland in the valley floors and foot-slopes that are important to achieving management objectives for scenic quality, biodiversity conservation, nature interpretation and cultural heritage conservation. Incorporate this analysis into a master plan for the more intensively used parts of Tidbinbilla. 	High
6.5	<p><u>Geodiversity</u></p> <ul style="list-style-type: none"> Identify and map significant geological and geomorphological features at Tidbinbilla as a basis for protection from disturbance. 	Medium
	<ul style="list-style-type: none"> Manage culturally significant geological features to protect their integrity. 	High Ongoing
	<ul style="list-style-type: none"> Interpret geodiversity features and processes as a key element in the values of Tidbinbilla. 	Medium Ongoing
	<ul style="list-style-type: none"> Protect the natural integrity of places with significant geodiversity values by appropriate management actions (e.g. avoidance of impacts from works and management of recreational use). 	High Ongoing
6.6	<p><u>Hydrology and Water Management</u></p> <ul style="list-style-type: none"> Develop a program for monitoring the water resources of Tidbinbilla that incorporates water flows, water storage, water quality, biotic health and sustainable groundwater abstraction. Align this program with the Waterwatch program at Tidbinbilla. 	High
	<ul style="list-style-type: none"> Assess the risks and consequences of a flood event adversely affecting the Sanctuary wetlands, the Tidbinbilla River and riparian areas. Develop a contingency plan to manage issues arising from such an assessment. 	High
	<ul style="list-style-type: none"> In all works, developments and the provision of infrastructure and facilities, include measures to avoid or minimise impacts on water resources. 	High Ongoing
	<ul style="list-style-type: none"> Apply water conservation measures in all aspects of reserve management including the provision of infrastructure and facilities. 	Medium Ongoing
	<ul style="list-style-type: none"> Provide information and explanation to visitors on water conservation measures. 	Medium Ongoing
6.7	<p><u>Native Vegetation</u></p> <ul style="list-style-type: none"> Conduct systematic monitoring of significant species and vegetation communities. 	Medium Ongoing
	<ul style="list-style-type: none"> Continue the rehabilitation of disturbed areas mainly through assisted natural regeneration and environmental protection measures. 	High Ongoing
	<ul style="list-style-type: none"> Avoid disturbance to significant and/or sensitive vegetation communities and species by visitor and management activities. 	High Ongoing
	<ul style="list-style-type: none"> Prepare management guidelines, as required, for vegetation communities and component species, in particular for those that are threatened, uncommon, or otherwise significant. 	Medium
	<ul style="list-style-type: none"> Manage vegetation, especially in higher use areas of Tidbinbilla, with the aim of ensuring visitor safety. 	High Ongoing
	<ul style="list-style-type: none"> Identify and document traditional Aboriginal knowledge of the vegetation in Tidbinbilla and, where appropriate, apply this to management and educational and interpretive activities. 	Medium Ongoing
	<ul style="list-style-type: none"> Evaluate the use of native plants that have particular cultural significance to Aboriginal people, in revegetation projects and amenity plantings at Tidbinbilla. 	Medium Ongoing
6.8	<p><u>Native Animals</u></p> <ul style="list-style-type: none"> Maintain a fauna inventory to national standards and ensure that it is regularly updated as new knowledge becomes available. 	Medium Ongoing

Sec.	Action	Priority
	<ul style="list-style-type: none"> Identify and document traditional Aboriginal knowledge of the fauna of Tidbinbilla and, where appropriate, apply this to management and educational and interpretive activities. 	Medium Ongoing
	<ul style="list-style-type: none"> Continue to contribute to research and monitoring to record the post-2003 fire recovery, distribution, abundance and other details of animal species. Give priority to species that are threatened, uncommon, vulnerable to disturbance or environmental change (including climate change), or are of regional significance. 	Medium Ongoing
	<ul style="list-style-type: none"> Encourage and support research into the fauna of Tidbinbilla, especially where this accords with management priorities. 	Medium Ongoing
	<ul style="list-style-type: none"> Develop management guidelines for species that are declared threatened or are of conservation concern, in accordance with recovery plans and other relevant material. 	Medium
	<ul style="list-style-type: none"> Control dingo/wild dog populations in areas bordering rural leases but maintain populations in other areas of Tidbinbilla. Coordinate dingo/wild dog management with the adjacent Namadgi National Park. 	Medium Ongoing
	<ul style="list-style-type: none"> Manage the eastern grey kangaroo population in accordance with the principles and policies in the ACT Kangaroo Management Plan. 	Medium Ongoing
	<ul style="list-style-type: none"> Provide information to park visitors on the fauna of Tidbinbilla and its management. 	Medium Ongoing
6.9	<p>Pest Species</p> <p>Pest Plants</p> <ul style="list-style-type: none"> Design and undertake management programs for pest plants in accordance with the ACT Weeds Strategy, weed control priorities, and in cooperation with adjacent land managers. 	High Ongoing
	<ul style="list-style-type: none"> Maintain alerts for emerging environmental weeds and, where possible, eradicate new infestations before species become established. 	High Ongoing
	<ul style="list-style-type: none"> Provide information to assist the community in identifying and reporting new weed species of concern (e.g. hawkweeds). 	High Ongoing
	<ul style="list-style-type: none"> Investigate opportunities to increase community involvement in weed management in Tidbinbilla. 	Medium
	<ul style="list-style-type: none"> Undertake rehabilitation of areas disturbed by management activities, or the provision of infrastructure or services, to minimise opportunities for weed invasion. 	High Ongoing
	<ul style="list-style-type: none"> Develop a management program for Burgan and other shrub vegetation in the Tidbinbilla Valley related to management objectives for particular areas. Undertake control of this shrub vegetation in valley and foothill areas to maintain vistas, keep areas open for viewing of free-ranging kangaroos, and conserve cultural landscapes. 	High Ongoing
	<p>Pest Animals</p> <ul style="list-style-type: none"> Design and undertake management programs for pest animals in accordance with the <i>ACT Pest Animal Management Strategy 2012-2022</i> and pest animal control priorities, and in cooperation with adjacent land managers. 	High Ongoing
	<ul style="list-style-type: none"> Maintain alerts for emerging pest species (e.g. deer) and control methods. 	Medium Ongoing
	<ul style="list-style-type: none"> Collaborate with research organisations and other Australian Alps national parks agencies on the development of cost-effective, efficient, humane and target-specific methods of pest animal control. 	Medium Ongoing
	<ul style="list-style-type: none"> Continue to develop the management response to the threats to public safety and biodiversity posed by the European wasp, including education, nest destruction and emergency response capability. Close parts of the reserve at times when the risk to public safety is unacceptable. Focus the management response to areas of high public use. 	High Ongoing

Sec.	Action	Priority
6.10	Fire Ecology <ul style="list-style-type: none"> Plan for fire protection as part of the annual Bushfire Operational Plan prepared by Park and Conservation. 	High Ongoing
	<ul style="list-style-type: none"> Undertake fire management planning for Tidbinbilla to integrate protection of ecological and hydrological values into fire management strategies. 	Medium Ongoing
	<ul style="list-style-type: none"> Ensure that on-ground fire management activities (e.g. fire trail construction, bushfire suppression and prescribed burning) are undertaken in ways that recognise and protect significant ecological and hydrological values. 	High Ongoing
6.11	Ecological Rehabilitation <ul style="list-style-type: none"> Undertake a structured, long-term rehabilitation program for Jedbinbilla and Gibraltar with the objective of re-establishing native ecosystems. 	High Ongoing
	<ul style="list-style-type: none"> Continue to involve community groups in the planning, undertaking, monitoring and data recording of ecological rehabilitation projects at Tidbinbilla. 	High Ongoing
Chapter 7 Cultural Values		
7.8	Statutory Compliance and Best Practice <ul style="list-style-type: none"> Prepare or update conservation management plans for Aboriginal and European cultural heritage and significant cultural heritage places as the primary basis for their ongoing management. These plans are to include statutory requirements and relevant principles, policies and guidelines. 	Medium
	Aboriginal Cultural Heritage Values <ul style="list-style-type: none"> Undertake an archaeological study to determine the characteristics and significance of the rock shelters at Jedbinbilla. 	High
	<ul style="list-style-type: none"> Prepare a comprehensive assessment of Aboriginal cultural heritage at Tidbinbilla to provide the basis for a strategic approach to the interpretation of Aboriginal cultural heritage by Aboriginal people. 	High
	<ul style="list-style-type: none"> Identify and document traditional Aboriginal ecological knowledge and, where appropriate, use it in reserve management through partnerships with Aboriginal people. 	Medium Ongoing
	<ul style="list-style-type: none"> Develop an interpretation program for Aboriginal cultural heritage at Tidbinbilla by Aboriginal people and promote this to visitors. 	High
	<ul style="list-style-type: none"> Develop a strategy to establish the interpretation of Aboriginal cultural heritage at Tidbinbilla by Ngunnawal people. 	High
	<ul style="list-style-type: none"> Explore the development of protocols with the Ngunnawal community for access to Tidbinbilla by Aboriginal people for cultural purposes that address: <ul style="list-style-type: none"> access (including vehicle use) potential establishment of Aboriginal cultural camps hunting of animals and gathering of plants by Aboriginal people as part of cultural camps. 	Medium Ongoing
	European Cultural Heritage Values <ul style="list-style-type: none"> Prepare a comprehensive assessment of European cultural heritage at Tidbinbilla to provide the basis for an interpretation program. 	Medium
	<ul style="list-style-type: none"> Include the range of previous land uses and activities (e.g. forest based industry, faunal studies) in the interpretation of European cultural heritage. 	Medium
	<ul style="list-style-type: none"> Investigate the feasibility of establishing interpretive displays to inform visitors about the nature and significance of previous uses and activities (e.g. a display or re-creation of the eucalyptus oil distilling process and its environmental impact, incorporating relict material such as the boilers). 	Medium
	<ul style="list-style-type: none"> Evaluate the feasibility of establishing a 'heritage trail', mostly accessible by foot or bicycle, using Rock Valley homestead as a focal point. 	Medium

Sec.	Action	Priority
	<ul style="list-style-type: none"> Develop an interpretation program for European cultural heritage at Tidbinbilla and promote this to visitors. 	Medium
	<p>Protection of Cultural Heritage Values</p> <ul style="list-style-type: none"> Conserve cultural heritage places, historic buildings, archaeological sites, stabilised ruins, non-invasive exotic plant species of cultural significance, and portable heritage objects. Achieve this through maintenance, stabilisation, restoration, reconstruction and adaptation; as defined in the Burra Charter and based on conservation planning, studies, and professional advice. 	High Ongoing
	<ul style="list-style-type: none"> Leave portable Aboriginal and European heritage objects <i>in situ</i> unless there is a demonstrated need to remove them for conservation and/or curatorial purposes or where there is an unacceptable risk of loss through theft, vandalism or other actions. Removal of any objects is to be carried out in accordance with the provisions of the <i>Heritage Act 2004</i>. 	High Ongoing
	<p>Sustainable Cultural Heritage Recreation and Tourism</p> <ul style="list-style-type: none"> Promote the Aboriginal and European cultural heritage of Tidbinbilla in information about the reserve; including its significance and conservation requirements, and appropriate visitor behaviour. 	High Ongoing
	<ul style="list-style-type: none"> Investigate providing controlled access, including construction of a walking track, to Aboriginal cultural heritage sites in Jedbinbilla following the completion of an archaeological study and in consultation with the local Aboriginal community. 	Medium
	<ul style="list-style-type: none"> Develop visitor arrangements for Nil Desperandum including walking and cycling access, regular open days, and short-term hire of the house. 	High
	<ul style="list-style-type: none"> Establish protocols for visits to cultural heritage places by tourism operators. 	High
	<p>Promotion of Cultural Heritage Research</p> <ul style="list-style-type: none"> Encourage and support research into the cultural heritage of Tidbinbilla. 	Medium Ongoing
	<ul style="list-style-type: none"> Incorporate the results of cultural heritage research into the management of Tidbinbilla and into education and interpretation programs. 	Medium Ongoing
	<p>Enhancement of Staff and Volunteer Skills and Knowledge</p> <ul style="list-style-type: none"> Ensure that staff and volunteers working with Aboriginal people and involved with Aboriginal cultural heritage are provided with the opportunity to undertake cross-cultural awareness training. 	Medium Ongoing
	<ul style="list-style-type: none"> Develop and maintain a training program for staff and volunteers to ensure a high professional standard in the management and interpretation of cultural heritage. 	High
	<ul style="list-style-type: none"> Support a training, employment and career development program for Ngunnawal and other Aboriginal people aimed at assisting them to participate in the management of Tidbinbilla and interpretation of its Aboriginal cultural heritage. 	Medium Ongoing
Chapter 8 Recreation and Tourism		
8.4	<p>Managing Visitor Impacts</p> <ul style="list-style-type: none"> Manage recreational activities at Tidbinbilla to minimise impact on natural and cultural heritage values by careful siting of tracks and facilities, protective measures, visitor education, promotion of minimal impact codes (e.g. Australian Alps codes), and liaison with user groups. 	High Ongoing
	<ul style="list-style-type: none"> Develop monitoring programs to assess visitor impacts, especially in areas with significant natural and/or cultural heritage values. 	Medium
8.5	<p>Managing Visitor Safety</p> <ul style="list-style-type: none"> Maintain and update as required an emergency response plan for Tidbinbilla, in conjunction with the Australian Federal Police, the Emergency Services Agency and other organisations. 	High Ongoing
	<ul style="list-style-type: none"> Ensure that all facilities at Tidbinbilla are designed and built to relevant standards and to minimise risks to visitors. 	High Ongoing
	<ul style="list-style-type: none"> For Birrigai at Tidbinbilla, ensure that staff regularly update the risk assessments of key activities and are trained appropriately to deliver high risk activities. 	High Ongoing

Sec.	Action	Priority
	<ul style="list-style-type: none"> Provide clear descriptive and safety information to visitors about the designated walks in Tidbinbilla. 	High Ongoing
	<ul style="list-style-type: none"> Ensure that visitors are adequately warned about potential hazards (e.g. herbicide spraying, European wasps). 	High Ongoing
8.6	Communication	
	<ul style="list-style-type: none"> Develop and maintain a communication program that introduces and promotes Tidbinbilla as a high quality conservation, education, recreation and tourism destination. 	High Ongoing
	<ul style="list-style-type: none"> Develop a marketing strategy for Tidbinbilla that strategically targets potential visitors including overseas and interstate tourists, and potential users of the facilities of Birrigai at Tidbinbilla. 	High Ongoing
	<ul style="list-style-type: none"> Explore the use of the full range of information and communication technologies for the communication program and marketing strategy. 	High Ongoing
	<ul style="list-style-type: none"> Seek partnerships with other government agencies, commercial organisations, community groups, and volunteer organisations to communicate and market the conservation values and recreational and educational opportunities of Tidbinbilla. 	Medium Ongoing
8.7	Nature Based Tourism	
	<ul style="list-style-type: none"> Include nature based tourism opportunities in the communication program and marketing strategy developed for Tidbinbilla (s. 8.6). 	High Ongoing
	<ul style="list-style-type: none"> Encourage tourism operators to include Tidbinbilla in their programs and provide advice to such operators on the values of Tidbinbilla, management of the precinct, and recreational, educational and accommodation opportunities and options. 	Medium Ongoing
	<ul style="list-style-type: none"> Design and operate facilities at Tidbinbilla so that they are welcoming to tourists. 	High Ongoing
	<ul style="list-style-type: none"> Seek partnerships with other government agencies, commercial organisations, community groups, and volunteer organisations to promote and develop tourism opportunities at Tidbinbilla. 	Medium Ongoing
	<ul style="list-style-type: none"> Work with the managers of other attractions on Tourist Drive 5 to maintain the profile of the drive and to encourage its use by visitors to the ACT. 	Medium Ongoing
	<ul style="list-style-type: none"> Grant licences or permits to commercial recreation and tourism operators, where their proposed operations accord with the management objectives for Tidbinbilla, and subject to the policies outlined above. 	Medium Ongoing
8.8	Recreational Activities	
	Walking	
	<ul style="list-style-type: none"> Undertake a program of works to provide a network of walking tracks in Tidbinbilla that provide walking opportunities for people with a range of abilities. 	Medium
	<ul style="list-style-type: none"> Maintain walks at Tidbinbilla according to their classification and in relation to levels of use. 	Medium Ongoing
	<ul style="list-style-type: none"> Develop information and interpretive material to promote walking in Tidbinbilla, to encourage tourists, and to enhance the safety of walkers and their experience of Tidbinbilla. 	Medium
	<ul style="list-style-type: none"> Promote the Australian Alps National Parks Bushwalking Code to bushwalkers in Tidbinbilla. 	Medium Ongoing
	Cycling	
	<ul style="list-style-type: none"> Investigate the potential and location for cycling routes in the Tidbinbilla precinct, in particular, those suited to family cycling. 	Medium
	<ul style="list-style-type: none"> Promote the Australian Alps National Parks Cycling Code to bicycle riders in Tidbinbilla. 	Medium Ongoing
	Picnicking	
	<ul style="list-style-type: none"> Maintain designated picnic and barbecue facilities to a high standard. 	High Ongoing
	<ul style="list-style-type: none"> Provide information at picnic areas on recreational, educational and interpretive opportunities at Tidbinbilla. 	Medium Ongoing

Sec.	Action	Priority
	Nature-based Activities including Wildlife Viewing and Bird Watching	
	<ul style="list-style-type: none"> Provide information and interpretation to encourage and support nature-based activities at Tidbinbilla. 	High Ongoing
	<ul style="list-style-type: none"> Investigate the opportunities for further development of specialised wildlife tours, including night time tours (e.g. to observe nocturnal arboreal mammals). 	Medium
	<ul style="list-style-type: none"> Provide opportunities and guidance for visitors to observe wildlife in natural, created and captive habitats (enclosures). 	High Ongoing
	Visiting Natural and Cultural Heritage Sites	
	<ul style="list-style-type: none"> Pursue opportunities to make the natural and cultural attributes of Tidbinbilla accessible to visitors while protecting the values of particular sites. 	High Ongoing
	<ul style="list-style-type: none"> Provide information and interpretation for natural and cultural heritage sites aimed at enriching the visitor experience and understanding. 	High Ongoing
	<ul style="list-style-type: none"> Monitor visitor impacts at important or sensitive sites and take remedial action if disturbance threatens to adversely affect the site. 	
	Special Events	
	<ul style="list-style-type: none"> Determine suitable sites for large events in Tidbinbilla that contain necessary facilities, avoid conflict between the event and other users, and minimise impact on the values of Tidbinbilla. 	Medium
8.9	Recreation Facilities	
	<ul style="list-style-type: none"> Maintain recreational facilities to a high standard to minimise impact on the values of the precinct and to ensure public safety. 	High Ongoing
	<ul style="list-style-type: none"> Enhance displays and the distribution of material related to the ACT parks and reserves system in the Visitor Information Centre at Tidbinbilla. 	Medium Ongoing
	<ul style="list-style-type: none"> In a master plan for the more intensively used parts of Tidbinbilla, investigate the benefits and feasibility of relocating the entrance to Birrigai. 	Medium
8.10	Staying Overnight	
	<ul style="list-style-type: none"> Establish an appropriate business model for the operation of Birrigai at Tidbinbilla to develop overnight accommodation opportunities for the public. 	High
	<ul style="list-style-type: none"> Prepare and implement hiring arrangements for Nil Desperandum, in terms of the policy outlined above. 	High
	<ul style="list-style-type: none"> Consider the desirability and feasibility of establishing vehicle-based (tent) camping and 'eco-lodge' and 'eco-cabin' style accommodation at Tidbinbilla (Zone 3) in association with expanded tourism opportunities for Tidbinbilla. 	High
	<ul style="list-style-type: none"> Pursue opportunities to establish further overnight accommodation, if these are feasible, desirable and in accordance with the other objectives and policies in this management plan and the outcomes of the master plan. 	Medium
	<ul style="list-style-type: none"> Promote the Woods Reserve camping area to those seeking a vehicle-based campground in the vicinity of Tidbinbilla. 	Medium Ongoing
Chapter 9 Education and Interpretation		
9.4	Education	
	<ul style="list-style-type: none"> Investigate the benefits and feasibility of establishing an education centre at Tidbinbilla in association with the Wildlife Precinct. Include an assessment of suitable sites for such a facility in a master plan for the more intensively used parts of Tidbinbilla (s. 11.8). 	High
	<ul style="list-style-type: none"> Integrate the education activities of Birrigai at Tidbinbilla and Tidbinbilla Nature Reserve through co-operative arrangements involving programs, staffing and facilities. 	Medium Ongoing
9.5	Birrigai at Tidbinbilla	
	<ul style="list-style-type: none"> Through the establishment of joint staff teams across Birrigai at Tidbinbilla and Tidbinbilla Nature Reserve, consolidate and expand the development of educational experiences for both school groups and the community. 	High Ongoing

Sec.	Action	Priority
	<ul style="list-style-type: none"> Develop programs with Tidbinbilla ranger staff and volunteers, build staff expertise and external partnerships, and communicate to existing and potential users the educational opportunities available at Birrigai at Tidbinbilla. 	High Ongoing
	<ul style="list-style-type: none"> Consider integration of Birrigai education activities with those for Tidbinbilla as a whole, when developing a Tidbinbilla master plan 	High Ongoing
	<ul style="list-style-type: none"> Ensure the educational programs on offer at Birrigai at Tidbinbilla are aligned to the new Australian Curriculum to meet the needs of schools from the ACT and beyond. 	High Ongoing
9.6	Interpretation	
	<ul style="list-style-type: none"> Continue to develop the interpretation program at Tidbinbilla using a range of methods and media that is tailored to places, themes and the different types of visitors. 	High Ongoing
	<ul style="list-style-type: none"> Give particular attention to high quality interpretation for visitor attractions such as the Sanctuary and the Gibraltar Peak walk. 	High Ongoing
	<ul style="list-style-type: none"> Providing training for rangers and volunteer guides and assistance to tour operators so that they are able to provide high quality interpretive services. 	Medium Ongoing
	<ul style="list-style-type: none"> Explore ways to involve local Aboriginal people in the interpretation of Aboriginal cultural heritage at Tidbinbilla. 	Medium Ongoing
Chapter 10 Research and Monitoring		
10.4	Wildlife Collection	
	<ul style="list-style-type: none"> Seek corporate partnerships, sponsorships and donations to support the operation of the wildlife collection (s. 4.3). 	Medium Ongoing
	<ul style="list-style-type: none"> Where appropriate, provide opportunities for community involvement in programs associated with the wildlife collection. 	Low Ongoing
	<ul style="list-style-type: none"> Prepare species management plans for all species displayed at Tidbinbilla. These plans are to be prepared in accordance with ACT legislation, ARAZPA requirements (Australasian Species Management Program) and other guidelines. 	High
	<ul style="list-style-type: none"> Keep the Wildlife Collection Plan under review in relation to management requirements for the collection. 	Medium Ongoing
	<ul style="list-style-type: none"> Maintain liaison and interaction with other institutions to share information relating to captive management of native species. 	Medium Ongoing
	<ul style="list-style-type: none"> Investigate options for the use of the veterinary centre located in the Sanctuary. 	High
	Threatened Species	
	<ul style="list-style-type: none"> Explore opportunities for further captive breeding programs at Tidbinbilla. 	Medium
	<ul style="list-style-type: none"> Investigate appropriate ways to make the threatened species program of the wildlife collection accessible to visitors to Tidbinbilla. 	Medium
10.5	Survey, Monitoring and Research	
	<ul style="list-style-type: none"> Pursue opportunities for collaborative research with Australian Alps national parks agencies, research institutions, other government agencies and community groups. 	Medium Ongoing
	<ul style="list-style-type: none"> Facilitate and support threatened species research, especially in relation to species that are held, or there is the capability to hold, at Tidbinbilla. 	High Ongoing
	<ul style="list-style-type: none"> Facilitate and support research into the natural and cultural values of Tidbinbilla. 	Medium Ongoing
	<ul style="list-style-type: none"> Collect visitor data on a regular basis, to inform management decisions. 	Medium Ongoing
	<ul style="list-style-type: none"> Maintain a central repository of information about Tidbinbilla, including the results of research. 	High Ongoing

Sec.	Action	Priority
Chapter 11 Environmental Planning, Protection and Management		
11.1	Fire Management <ul style="list-style-type: none"> Prepare and review a Bushfire Operational Plan for Tidbinbilla as part of the annual Bushfire Operational Plan for the Territory and Municipal Services Directorate. 	High Ongoing
	<ul style="list-style-type: none"> Carry out fire management works and activities in accordance with the Tidbinbilla Regional Fire Management Plan and the Bushfire Operational Plan. 	High Ongoing
	<ul style="list-style-type: none"> Include consideration of bushfire risk in the design and development of infrastructure and facilities at Tidbinbilla. 	High Ongoing
11.2	Environmental Impact Assessment <ul style="list-style-type: none"> Prepare work plans for all works undertaken in the reserve, which incorporate requirements for environmental protection. 	High Ongoing
	<ul style="list-style-type: none"> Ensure that procedures are in place for environmental impact assessments and that staff and contractors are aware of their responsibilities in adhering to the process. 	High Ongoing
11.3	Management Operations and Environmental Protection	
	Water Quality <ul style="list-style-type: none"> Monitor water quality, provide advice on water quality at the tap, and ensure drinking water supplies are of suitable quality. 	High Ongoing
	Water and Energy Use <ul style="list-style-type: none"> Evaluate the use of renewable energy sources for new and existing infrastructure and facilities at Tidbinbilla. 	Medium
	<ul style="list-style-type: none"> Use water and energy efficient equipment, appliances and systems in the management and operation of Tidbinbilla. 	Medium
	<ul style="list-style-type: none"> Where practicable, include information about water and energy efficiency principles and technologies in educational materials about Tidbinbilla. 	Low
	Chemicals and Hazardous Materials <ul style="list-style-type: none"> Ensure that staff and contractors using chemicals and hazardous materials are fully trained in their safe and effective use. 	High Ongoing
	<ul style="list-style-type: none"> Advise the public when chemicals and hazardous materials are being used in areas they might visit e.g. use of poison baits. 	High Ongoing
	<ul style="list-style-type: none"> Maintain Material Data Safety Sheets for all stored chemicals, which are available to all relevant personnel. 	High Ongoing
11.5	Access Management <ul style="list-style-type: none"> Issue guidelines and protocols to authorised users for access to otherwise closed management trails. 	High Ongoing
	<ul style="list-style-type: none"> Strictly manage and monitor the issue of keys for locked gates. 	High Ongoing
11.8	Tidbinbilla Master Plan <ul style="list-style-type: none"> Prepare a master plan to detail site planning, including facilities, for Tidbinbilla. 	High

GLOSSARY AND ABBREVIATIONS

ABBREVIATIONS

ha = hectares

Ma = million years ago

NP = National Park

GLOSSARY

Acceptable Change/Disturbance

This refers to limits to the type and scale of change appropriate to an area. It sets managers the task of defining how they want their destinations to be managed. The limits of acceptable change establish the maximum damage levels that society is prepared to accept in relation to the natural and cultural heritage of a place (Worboys et al. 2005; NSW NPWS 2006).

Adaptive management

Adaptive management is defined as management research involving the development of prior hypotheses about a dynamic natural resource, experimental application of a management treatment, collection of data sufficient to evaluate the effect of the intervention, and analysis (adapted from Walters 1986). Under this approach, management intervention is conducted in a rigorous experimental framework where the intervention is implemented as a scientific experiment (Georges, Hone and Norris 2008).

Aestivation

Aestivation is a period of dormancy in the life cycle of an animal, occurring during the period of summer heat (opposite of hibernation).

AUSRIVAS

AUSRIVAS (the Australian River Assessment System) is a rapid prediction system used to assess the biological health of Australian rivers. There are two components of the assessment: bioassessment and physical assessment. The sampling of 'waterbugs' (benthic macroinvertebrates) is a key part of bioassessment, which is based on comparing the diversity of animals found at a site with those predicted to occur there. (see <<http://ausrivas.canberra.edu.au.html>>)

Biodiversity (biological diversity)

Biodiversity is the variability among living organisms from all sources (including terrestrial, aquatic, marine and other ecosystems and ecological complexes of which they are part), which includes genetic diversity, species diversity and ecosystem diversity (National Biodiversity Strategy Review Task Group 2009).

Biota

Biota is a term for all the animal and plant life of a region or area.

Connectivity

Habitat connectivity is the degree to which an organism can move around the landscape due to the presence of suitable habitat. For fauna, connectivity has been defined as the 'degree to which the landscape facilitates or impedes movement among patches' (Bennett 1999).

Conservation

The following are definitions for *conservation* as applied to natural heritage and cultural heritage:

Natural Heritage: Conservation means all the processes and actions of looking after a place so as to retain its natural significance and always includes protection, maintenance and monitoring. It may also involve actions to repair degradation and includes conserving natural processes of change (*Australian Natural Heritage Charter*, 2nd edition (Australian Heritage Commission 2002a)). Conservation, as applied to species and ecological communities, refers to all the processes and actions aimed at the maintenance of those entities in perpetuity. This is also expressed as the 'conservation of biological diversity'.

Cultural Heritage: Conservation means all the processes of looking after a place so as to retain its cultural significance. Cultural significance means aesthetic, scientific, social or spiritual value for past, present or future generations (*Australia ICOMOS Burra Charter, 1999* (Australia ICOMOS 1999)). Conservation may also be applied to specific objects.

Conservation Status

The *conservation status* of a species is an assessment of its abundance in the wild and its ability to survive, flourish and evolve throughout its natural range. When a species is considered to be at risk of premature extinction it is described as *threatened*, which is an umbrella term for varying levels of extinction threat. Conservation status can range from secure and low risk through to extinct. For species threatened with extinction, the *Nature Conservation Act 1980* (ACT) provides for the categories of *vulnerable* and *endangered*.

Coppicing

The term *coppicing* is derived from coppice, referring to a dense growth of small trees or bushes. Coppicing refers to cutting of the limb(s) of a tree resulting in the growth of a number of new limbs from the stump, which are also cut at a later date. The technique was applied to eucalypt species used in eucalypt oil distilling, such as peppermints.

Custodian

The *Planning and Development Act 2007* (ACT) defines a *custodian* for an area of land as an administrative unit or other entity* with administrative responsibility for land in the ACT that is unleased land, public land or both.

* An entity includes an unincorporated body and a person (including a person occupying a position) (*Legislation Act 2001*).

Ecological Community

An *ecological community* is an assemblage of plant and animal species that occur together in space and time.

Ecosystem

An *ecosystem* is a dynamic complex of organisms and their environment, interacting as a functional unit (Australian Heritage Commission 2002a).

Ecosystem Services

These are functions of natural ecosystems that maintain the atmosphere; provide clean water; control soil erosion, pollution and pests; pollinate plants; and provide many other essential services. The functioning of natural ecosystems provides services essential to human survival. Collectively, these services maintain the earth in a state that can support life (National Biodiversity Strategy Review Task Group 2009). Few ecosystem services have been valued economically and most are unrecognised and under-priced (PMSEIC 2002). High quality water from well managed catchments is an example of an ecosystem service, and one which is better recognised and valued than many others.

Fecundity

In population ecology, *fecundity* refers to the rate of production of offspring and may be expressed as the proportion of adult females producing young.

Fire Intensity

Fire intensity is a measure of the energy generated by the burning of the fuels in the fire (Carey et al. 2003).

Fire Severity

Fire severity is a measure of the impact of the fire on vegetation (Carey et al. 2003).

Geodiversity

Geodiversity is the natural range (diversity) of geological (bedrock), geomorphological (landform) and soil features, assemblages, systems and processes (Australian Heritage Commission 2002a).

Natural Integrity

Natural Integrity is the degree to which a place or ecosystem retains its natural biodiversity and geodiversity and other natural processes and characteristics (Australian Heritage Commission 2002a).

Nature Based Tourism

Nature based or nature tourism is broadly defined as visits to natural (or near-natural) areas. *Ecotourism* is a niche component of nature based tourism with a focus on education and interpretation. *Wildlife tourism* is any tourism involving wild animals.

National Reserve System

The *National Reserve System* is the system of formally recognised parks, reserves and protected areas primarily dedicated to the long-term protection of Australia's biodiversity. The protected areas occur on public, private and Indigenous land and are formally protected through legal or other effective means and managed in perpetuity (National Reserve System Task Group 2009).

Rehabilitation

Rehabilitation refers to the improvement in condition of land and/or ecological communities and their component species following degrading disturbance. Rehabilitation may involve regeneration, restoration or reinstatement representing progressively *greater degrees of human intervention*. These terms are defined in the *Australian Natural Heritage Charter* (Australian Heritage Commission 2002a).

Regeneration means the natural recovery of natural integrity following disturbance or degradation.

Restoration means returning existing habitats to a known past state or to an approximation of the natural condition by repairing degradation, by removing introduced species or by reinstatement.

Reinstatement means to introduce to a place one or more species or elements of habitat or geodiversity that are known to have existed there naturally at a previous time, but that can no longer be found at that place.

Social impact

Social impact refers to how reserve users and their activities affect others. This includes:

- the number of encounters with other people in more remote areas
- incompatible activities, or behaviour affecting other people (e.g. noise)
- presence of too many people (crowding), especially where low numbers are expected
- the presence of management facilities which may detract from the outdoor experience.

Survey, Monitoring, Research

Survey involves establishing the characteristics (or baseline condition) of something in a comprehensive or general way e.g. a building, vegetation of an area, a group of people. It often involves the counting, measurement and/or assessment of a variable or variables.

Monitoring involves the assessment of the characteristics of something over a period of time and will often involve the repeated counting, measurement and/or assessment of a variable or variables. It is only fully effective when a standardised method is used each time. Monitoring is focused on baseline conditions and long-term trends.

Research involves systematic investigations into a significant question (usually deriving from an established discipline) or 'problem' with the aim of establishing new knowledge. It is conducted over a period of time, may involve the investigation of relationships between variables and varying levels of analysis, and will be related to the philosophical and theoretical foundations of a discipline. Research can involve survey and monitoring.

Threatened

This is an umbrella term for various categories of risk of premature extinction.

Values

A *value* is a property or characteristic of something which makes it esteemed, desirable or useful. A value expresses worth, merit or importance. In land management, values are characterised as natural (deriving from the natural environment i.e. from landforms, geology, soils, vegetation, flora and fauna, hydrology, waterways) or cultural (deriving from human use and/or settlement). Natural and cultural values may be inter-related, overlap or perceived as inseparable by some people.

REFERENCES

- ACT ESA (Emergency Services Agency) 2009. *Strategic Bushfire Management Plan for the ACT. Version Two October 2009* (ACT Emergency Services Agency, Canberra).
- ACT Flora and Fauna Committee 2001. *Threatened Species and Communities in the ACT: Criteria for Assessment* (Environment ACT, Department of Territory and Municipal Services, Canberra).
- ACT Government 1997. Northern Corroboree Frog *Pseudophryne pengilleyi*. An endangered species. Action Plan No. 6 (Environment ACT, Department of Territory and Municipal Services, Canberra).
- ACT Government 1998. *The ACT Nature Conservation Strategy* (Department of Urban Services, Canberra).
- ACT Government 1999a. *Tidbinbilla Nature Reserve Management Plan* (Department of Urban Services, Canberra).
- ACT Government 1999b. Brush-tailed Rock-wallaby *Petrogale penicillata*. An endangered species. Action Plan No. 22 (Environment ACT, Department of Territory and Municipal Services, Canberra).
- ACT Government 2012. *ACT Pest Animal Management Strategy 2012-2022* (Environment and Sustainable Development Directorate, Canberra).
- ACT Government 2004a. *Think water, act water* (Environment ACT, Department of Territory and Municipal Services, Canberra).
- ACT Government 2004b. *Woodlands for Wildlife: ACT Lowland Woodland Conservation Strategy*. Action Plan No. 27 (Environment ACT, Department of Territory and Municipal Services Canberra).
- ACT Government 2005a. *A vision Splendid of the Grassy Plains Extended: ACT Lowland Native Grassland Conservation Strategy*. Action Plan No. 28 (Environment ACT, Department of Territory and Municipal Services Canberra).
- ACT Government 2005b. Spotted-tailed Quoll *Dasyurus maculatus*. A vulnerable species. Action Plan No. 30 (Environment ACT, Department of Territory and Municipal Services, Canberra).
- ACT Government 2006. *2006 Environmental Flow Guidelines* (Environment ACT, Department of Territory and Municipal Services, Canberra).
- ACT Government 2007a. *Weathering the Change. The ACT Climate Change Strategy 2007-2025* (Department of Territory and Municipal Services, Canberra).
- ACT Government 2007b. *Weathering the Change. Action Plan 1 2007-2011* (Department of Territory and Municipal Services, Canberra).
- ACT Government 2007c. *ACT Water Report 2006-2007* (Department of Territory and Municipal Services, Canberra).
- ACT Government 2008. *ACT Water Report 2007-2008* (Department of Territory and Municipal Services, Canberra).
- ACT Government 2009a. *ACT Weeds Strategy 2009-2019* (Department of the Environment, Climate Change, Energy and Water, Canberra).
- ACT Government 2009b. *Tidbinbilla Regional Fire Management Plan 2009-2019* (ACT Emergency Services Agency, Canberra). Viewed 1/10/2009. <<http://www.esa.act.gov.au>>
- ACT Government 2010a. *Namadgi National Park: Plan of Management* (Department of Territory and Municipal Services, Canberra).

- ACT Government 2010b. *ACT Kangaroo Management Plan* (Department of Territory and Municipal Services, Canberra).
- ACT Landscape 1997. *Tidbinbilla Nature Reserve: Integration of expanded visitor experiences with a three year capital investment plan*. Totalcare Industries Ltd. (Department of Urban Services, ACT Government, Canberra).
- ACT NRM (Natural Resource Management) Council 2009. *Bush Capital Legacy: iconic city, iconic natural assets. Plan for Managing the Natural Resources of the ACT* (ACT Natural Resource Management Council, Canberra).
- ACTPLA (ACT Planning and Land Authority) 2009. *Territory Plan* (ACT Government, Canberra). Viewed 21/8/2009. <<http://www.actpla.act.gov.au>>
- Allen RB, Partridge TR, Lee WG and Efford M 1992. Ecology of *Kunzea ericoides* (A. Rich.) J. Thompson (Kanuka) in east Otago, New Zealand, *New Zealand Journal of Botany* 30: 135-149.
- Australia ICOMOS 1999. *The Burra Charter: the Australia ICOMOS charter for the conservation of places of cultural significance* (The Australia ICOMOS Secretariat). Viewed 28/8/2009. <<http://icomos.org/australia/burra.html>>
- Australian Alps National Landscape Inc. 2009. *Draft Australian Alps National Landscape Master Plan* (Inspiring Place Pty Ltd, Hobart).
- Australian Capital Tourism 2008. *Word of Mouse: the importance of an online strategy to tourism growth in the ACT* (Department of Territory and Municipal Services, Canberra). Viewed 18/12/2009. <http://www.tams.gov.au/play/tourism/corporate/corporate_reports>
- Australian Capital Tourism 2009. *Australian Capital Tourism: Five year strategic plan 2009-13* (Department of Territory and Municipal Services, Canberra). Viewed 18/12/2009. <http://www.tams.gov.au/play/tourism/corporate/corporate_reports>
- Australian Heritage Commission 2000. *Protecting Local Heritage Places: A guide for communities* (Australian Heritage Commission, Canberra).
- Australian Heritage Commission 2002a. *Australian Natural Heritage Charter for the conservation of places of natural heritage significance*. 2nd edit. (Australian Heritage Commission/Australian Committee for IUCN, Canberra).
- Australian Heritage Commission 2002b. *Ask First: A guide to respecting Indigenous heritage places and values* (Australian Heritage Commission, Canberra).
- Australian Heritage Commission 2003. *Protecting Natural Heritage: using the Australian Natural Heritage Charter* (Commonwealth of Australia, Department of the Environment and Heritage, Canberra).
- Australian Heritage Commission and CRC for Sustainable Tourism 2001. *Successful Tourism at Heritage Places: A guide for tourism operators heritage managers and communities* (Australian Heritage Commission and CRC for Sustainable Tourism, Canberra).
- Australian Qualifications Framework 2010. Viewed 19/12/2010. <<http://www.aqf.edu.au>>
- Banks JCG 1982. Man, Fire and Snow Gum in the Brindabella Range, New South Wales, Paper to XIII International Botanical Congress, Sydney, 21-28 August 1981.
- Banks JCG 1989. A History of Forest Fire in the Australian Alps, in Good RG ed., *The Scientific Significance of the Australian Alps*. Proceedings of the First Fenner Conference. (Australian Academy of Science, Canberra): pp. 265-280.
- Barber Dearling Grinbergs and Saunders 2004. *Block 60 (ACT Forests) Investigations of Aboriginal Heritage Places*. Unpubl. Report to Heritage Unit, Environment ACT and ACT Forests (Canberra).
- Barber M 2001. Archaeological Monitoring of a New Road within the Tidbinbilla Nature Reserve. Unpubl. report to Tidbinbilla Nature Reserve (Canberra).

- Barber M and Williams D 1996. *An Archaeological Investigation of Kangaroo Flats and Lyrebird Ridge, Tidbinbilla Nature Reserve, ACT*. Unpubl. report to Tidbinbilla Nature Reserve (Canberra).
- Barrow G 2009. *Exploring Tidbinbilla on Foot: Twenty bushwalks in Canberra's resurrected nature reserve* (Dagraja Press, Hackett, ACT).
- Bluett WP 1954. *The Aborigines of the Canberra district at the arrival of the white man*. Unpubl. (Canberra and District Historical Society, Canberra).
- Bennett AF 1999. *Linkages in the Landscape: the role of corridors and connectivity in wildlife conservation* (The IUCN Forest Conservation Program: Gland, Switzerland).
- Bulbeck D and Boot P 1991. *Tidbinbilla Nature Reserve: Cultural Resource Survey and Conservation Plan*. Report to ACT Heritage Unit and ACT Parks and Conservation Service (Canberra).
- Cairnes L and Australian Alps Liaison Committee 2008. *Strategic Plan 2008–2011 for the Australian Alps national parks Co-operative Management Program* (Fathom Consulting, Sydney and Australian Government, Department of the Environment, Water, Heritage and the Arts, Canberra).
- Carey A, Evans M, Hahn P, Lintermans M, MacDonald T, Ormay P, Sharp S, Shorthouse D and Webb N 2003. *Wildfires in the ACT 2003: Report on Initial Impacts on Natural Ecosystems*. Technical Report No. 17 (Environment ACT, Canberra).
- Commonwealth of Australia 2008. Inclusion of a place in the National Heritage List (Commonwealth of Australia. Gazette. No. S237 Friday 7 November 2008).
- Corbett LK 2008. Dingo, in *The Mammals of Australia* 3rd Edit., eds S Van Dyck and R Strahan (Reed New Holland, Chatswood): pp. 737–739.
- Costin AB 1989. The Alps in global perspective, in the *Scientific Significance of the Australian Alps*. Proceedings of the First Fenner Conference on the Environment. Canberra, September 1988, ed. R Good (Australian Alps National Parks Liaison Committee, Canberra): pp. 7–19.
- DEC (Department of Environment and Conservation) Western Australia 2007. *Shark Bay Terrestrial Reserves and Proposed Reserve Additions. Draft Management Plan 2007* (Conservation Commission of Western Australia, Perth).
- DECCW (Department of Environment, Climate Change and Water) NSW 2006. *Proceedings of the 2006 Aboriginal Joint Management Meeting* (Department of Environment, Climate Change and Water NSW, Sydney). Viewed 14 October 2010.
<http://www.environment.nsw.gov.au/resources/parks/mungoSection08.pdf>
- DEH (Department of the Environment and Heritage) 2006a. *EPBC Act Policy Statement 1.1 Significant Impact Guidelines. Matters of National Environmental Significance* (May 2006) (Australian Government, Department of the Environment and Heritage, Canberra).
- DEH (Department of the Environment and Heritage) 2006b. *EPBC Act Policy Statement 1.2 Significant Impact Guidelines. Actions on, or impacting on, Commonwealth land, and actions by Commonwealth agencies* (May 2006) (Australian Government, Department of the Environment and Heritage, Canberra).
- Department of the Interior 1972. *Tidbinbilla Nature Reserve: Trail Guide* (Australian Government Publishing Service, Canberra).
- DEWHA (Department of the Environment, Water, Heritage, and the Arts) 2009a. Australia's Bioregions. Viewed 15 June 2009. <www.environment.gov.au/parks/nrs/science/ibra.html>
- DEWHA (Department of the Environment, Water, Heritage and the Arts) 2009b. An Agreement between the Commonwealth of Australia and the Australian Capital Territory under section 45 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) relating to Environmental Impact Assessment (Australian Government, Department of the Environment, Water, Heritage and the Arts, Canberra). Viewed 31/8/2009. <<http://environment.gov.au/epbc/assessments/bilateral/index.html>>

- Doherty M 1998. *The Conservation Value of Regrowth Native Plant Communities: A Review*. A Report Prepared for the New South Wales Scientific Committee (CSIRO, Australia). Viewed 22 June 2009. <www.environment.nsw.gov.au/resources/nature/RegrowthOfNativePlants.pdf>
- Dudley N ed. 2008. *Guidelines for Applying Protected Area Management Categories* (IUCN, Gland).
- Dunlop M and Brown PR 2008. *Implications of Climate Change for Australia's National Reserve System: A Preliminary Assessment*. CSIRO Sustainable Ecosystems, report to the Australian Government,
- Department of the Environment, Water, Heritage, and the Arts, Canberra). Viewed 31/8/2009. <<http://climatechange.gov.au/impacts.html>>
- Eagles P, McCool S and Haynes C 2002. *Sustainable Tourism in Protected Areas. Guidelines for Planning and Management* (IUCN, Gland, Switzerland).
- Feary S 2010. Submission on *Tidbinbilla Draft Plan of Management May 2010* (Dr Sue Feary, Conservation Management, Vincentia, NSW).
- Finlayson D M (compiler) 2008. *A Geological Guide to the Canberra Region and Namadgi National Park* (Geological Society of Australia (ACT Division)).
- Fisher V 1996. *Gibraltar: An Old Bush School* (Congwarra, ACT).
- Fletcher D 2006. *Population Dynamics of Eastern Grey Kangaroos in Temperate Grasslands*. PhD thesis Applied Science (University of Canberra, Canberra).
- Flint M 1983. *To Green The Memory - A Story of the Green and Hatcliff Families of Tidbinbilla* (Congwarra, ACT).
- Flood J 1973. *The moth hunters - investigations towards a prehistory of of the south-eastern highlands of Australia*. PhD thesis (Australian National University, Canberra).
- Flood J 1980. *The Moth Hunters: Aboriginal Prehistory of the Australian Alps* (Australian Institute of Aboriginal Studies, Canberra).
- Flood J n.d. *Preliminary excavation report on Bogong Cave and shelters, Tidbinbilla Range, ACT*. Unpubl. (Tidbinbilla Nature Reserve, Canberra).
- Flood J, David B, Magee J and English B 1987. Birrigai: A Pleistocene site in the south-eastern highlands, *Archaeology in Oceania* 22: 9-26.
- Freeman Collett and Partners and Higgins M 1994. *Nil Desperandum Precinct Conservation Plan*. Three vols. (ACT Parks and Conservation Service, Canberra).
- Frith HJ ed. 1976. *Birds in the Australian High Country*. Rev. Edit. (AH & AW Reed, Sydney).
- Fullagar P 2008. *Tidbinbilla Lyrebirds*.
Viewed 22 June 2009. <http://peter.fullagar.com/2008_08_01_archive.html>
- Georges A, Hone LJ and Norris RH 2008. Applied Ecology, in *General Ecology. Vol 1 of Encyclopedia of Ecology* (5 vols), eds Jørgensen SE and Fath BD (Elsevier, Oxford): pp. 227-232.
- Gill AM and Ingwersen F 1976. Growth of *Xanthorrhoea australis* R.Br. in relation to fire, *Journal of Applied Ecology* 13: 195-203.
- Gill MA 1975. Fire and the Australian flora: a review, *Australian Forestry* 38: 4-25.
- Graefe AR, Kuss F and Vaske J 1990. *Visitor Impact Management Volume 2: The Planning Framework* (National Parks and Conservation Association, Washington).
- Green E 1999. *A Celebration of Jan Jandura Pucek's Naturalisation Ceremony*. Unpubl.
- Higgins M 1995. *Remembering Tidbinbilla* (Tidbinbilla Pioneers Association, Canberra).

- Higgins M 2009. *Rugged Beyond Imagination: Stories from an Australian Mountain Region* (National Museum of Australia Press, Canberra).
- Higginbottom K, Northrope CL, Croft DB, Hill B and Fredline L 2004. The role of kangaroos in Australian tourism, *Australian Mammalogy* 26(1): 23–32.
- Hinds L 2008. Tammar Wallaby, in *The Mammals of Australia* 3rd Edit., eds S Van Dyck and R Strahan (Reed New Holland, Chatswood): pp. 330–332.
- Hird C and Associates 1989. Tidbinbilla soil survey. Unpublished report.
- Ingwersen F 1979. *Assessment of proposed landscape changes in the Tidbinbilla River valley, (Block 18)*. Unpubl. report (Canberra).
- Ingwersen F 1983. Numerical analysis of the timbered vegetation in Tidbinbilla Nature Reserve, ACT, *Vegetatio* 51: 157–159.
- Ingwersen F 1985a. *Tidbinbilla Nature Reserve Vegetation*. Map (Australian Government Publishing Service, Canberra).
- Ingwersen F 1985b. Tidbinbilla Nature Reserve Vegetation. Interim explanatory notes to accompany the map, 'Tidbinbilla Nature Reserve Vegetation' (ACT Parks and Conservation Service, Canberra).
- Ingwersen F n.d. *Tidbinbilla*. Conservation Series No. 5 (Draft Edition) (ACT Conservation Service, Canberra).
- Kirschbaum S and Williams DG 1991. Colonization of pasture by *Kunzea ericoides* in the Tidbinbilla Valley, ACT, Australia, *Australian Journal of Ecology* 16: 79–90.
- Kitchin M 2008. Ecological targets for planned fire management – deriving fire thresholds for the conservation of plant species. Unpubl. report (Department of Territory and Municipal Services, Canberra).
- Lennon J and Mathews S 1996. *Cultural Landscape Management: guidelines for identifying, assessing and managing cultural landscapes in the Australian Alps national parks* (Jane Lennon and Associates for the Cultural Heritage Working Group, Australian Alps Liaison Committee).
- Margules SR and Associates 1968. *Tidbinbilla Nature Reserve: A General Development Plan*. Unpubl. (Department of the Interior, Canberra).
- MARS (Market Attitude Research Services) 2008. *Special Report for Tidbinbilla Nature Reserve* (Department of Territory and Municipal Services, Canberra).
- MARS (Market Attitude Research Services) 2009. *ACT Sportsgrounds, Parks and Open Spaces Usage and Satisfaction Survey – 2008/2009* (Department of Territory and Municipal Services, Canberra).
- Meyers D 2010. *Lairds, Lags and Larrikins: An Early History of the Limestone Plains* (Sefton Publications, Pearce, ACT).
- Micromex Research 2008. *Attitudes of ACT Residents towards Kangaroos and Kangaroo Management – Resident Research*. A research report prepared for the ACT Government (Parks, Conservation and Lands, Territory and Municipal Services) (Micromex, Wyong North, NSW).
- Mulvaney J and Kamminga J 1999. *Prehistory of Australia* (Allen and Unwin, St Leonards, NSW).
- Natural Resource Management Ministerial Council 2010. *Australia's Biodiversity Conservation Strategy 2010–2030*. (Australian Government, Department of Sustainability, Water, Population and Communities, Canberra).
- National Reserve System Task Group 2009. *Australia's Strategy for the National Reserve System 2009–2030* (Australian Government, Department of the Environment, Water, Heritage and the Arts, Canberra).

- NCA (National Capital Authority) 2002. *Consolidated National Capital Plan* (Commonwealth Government, Canberra). Viewed 21/8/2009. <<http://www.nationalcapital.gov.au/planning>>
- NCDC (National Capital Development Commission) 1986. *Cotter River Catchment Environmental Analysis*. Technical Paper 45 (National Capital Development Commission, Canberra).
- NCPA (National Capital Planning Authority) 1990. *Sites of Significance in the ACT. Vol. 7. Paddys River and Tennent Areas*. Technical Paper 56 (National Capital Planning Authority, Canberra).
- Neave HM and Tanton MT 1989. The effects of grazing by kangaroos and rabbits on the vegetation and the habitat of other fauna in the Tidbinbilla Nature Reserve, Australian Capital Territory, *Australian Wildlife Research* 16(3): 337–351.
- NHMRC (National Health and Medical Research Council) 2004. *Australian code of practice for the care and use of animals for scientific purposes*. 7th edition (Australian Government, National Health and Medical Research Council, Canberra).
- Non-Urban Study Steering Committee 2003a. *Shaping Our Territory. Options and Opportunities for Non-Urban ACT* (ACT Government, Department of Urban Services, Canberra).
- Non-Urban Study Steering Committee 2003b. *Shaping Our Territory. Final Report: Opportunities for Non-Urban ACT* (ACT Government, Department of Urban Services, Canberra).
- NSW NPWS (National Parks and Wildlife Service) 2002. *Neighbour Relations Policy* (Department of Environment and Conservation NSW, Sydney). Viewed 8/9/2009. <<http://www.environment.nsw.gov.au/resources/parks/policyNeighbourRelations.pdf>>
- NSW NPWS (National Parks and Wildlife Service) 2006. *2006 Plan of Management Kosciuszko National Park* (Department of Environment and Conservation NSW, Sydney).
- Officers of the Agriculture and Stock Section 1967. *Tidbinbilla Fauna Reserve. Programme for the Development of the Reserve for Conservation, Education and Recreation Purposes*. Unpubl. (Agriculture and Stock Section, Department of the Interior, Canberra).
- Ormay P 1982. Fauna survey of Tidbinbilla Nature Reserve (other than Aves). Unpubl. (ACT Parks and Conservation Service, Canberra).
- Ormay P 1996. Status of the brush-tailed rock wallaby *Petrogale penicillata* in the Australian Capital Territory. Technical Report 13 (ACT Parks and Conservation Service, Canberra).
- Ormay P and Ingwersen F 1993. *Management of Xanthorrhoea australis at Tidbinbilla Nature Reserve*. Technical Report 2 (ACT Parks and Conservation Service, Canberra).
- Peacock WJ and McCann D 1994. Biographical Memoirs. Michael James Denham White 1910–1983, *Historical Records of Australian Science* 10(2): 143–161.
- PCL (Parks, Conservation & Lands) 2009. *Tidbinbilla Wildlife Collection Policy* (Dept of Territory and Municipal Services, Canberra).
- PMSEIC (Prime Minister's Science, Engineering and Innovation Council) 2002. *Sustaining our Natural Ecosystems and Biodiversity* (Eighth meeting–31 May 2002, Canberra).
- Pryor LD 1939. The Bushfire Problem in the Australian Capital Territory, *Australian Forestry* 4(1): 31–38.
- Robinson FN and Frith HJ 1981. The superb lyrebird *Menura novaehollandiae* at Tidbinbilla, ACT, *Emu* 81: 145–157.
- Rowell A and Crawford I 1995. A survey of the Morabine Grasshopper *Keyacris scurra* (Rehn) in the ACT. Unpublished report to the Wildlife Research Unit, ACT Parks and Conservation Service.
- Rutzou TV, Rauhala MA and Ormay PI 1994. *The fish fauna of the Tidbinbilla River catchment*. Technical Report 7 (ACT Parks and Conservation Service, Canberra).
- Sanmore Consulting Group 2005. *Discovering Nature at Tidbinbilla: A report on the Development Options for Nature Discovery in Tidbinbilla Nature Reserve*. Unpubl. report (Parks, Conservation and Lands, Department of Territory and Municipal Services, Canberra).

- Shaping Our Territory Implementation Group 2004. *Shaping Our Territory. Tidbinbilla Nature Reserve: Business Case and Master Plan* (ACT Government, Department of Urban Services, Canberra).
- Sharp S, Macdonald T, Kitchin M and Dunford M 2007. *Setting Conservation Targets for Vegetation Communities in the ACT* (Dept of Territory and Municipal Services, Canberra).
- Standards Australia Ltd 2001. AS2156.1-2001 Walking Tracks Part 1: Classification and Signage; AS2156.2-2001 Walking Tracks Part 2: Infrastructure Design (Standards Australia Ltd, Sydney). Viewed 26/5/2009. <<http://www.standards.org.au>>
- Stanhope J 2004. Media Release: *The Canberra Plan - After the Fires: A bright new future for nonurban ACT* (ACT Government, Office of the Chief Minister, Canberra).
- Stankey GH, Cole DN and Lucas RC 1985. *The Limits of Acceptable Change (LAC) System for Wilderness Planning* (Forest Service, US Department of Agriculture, Ogden).
- TAMS (Department of Territory and Municipal Services) 2009. ACT Heritage Register. Viewed 22 June 2009. <http://www.tams.act.gov.au/live/heritage/act_heritage_register/act_heritage_register_district/pdf>
- Taylor McC and COG (Canberra Ornithologists Group) 1992. *Birds of the Australian Capital Territory - An Atlas* (COG and the National Capital Planning Authority, Canberra).
- Tilden F 1957. *Interpreting our heritage* (University of North Carolina Press, Chapel Hill).
- Tourism Research Australia 2009. Nature Tourism Fact Sheet 2008 (Tourism Research Australia, Canberra). Viewed 9/10/2009. <<http://www.tra.australia.com>>
- URS Australia 2009. *Report Erosion Potential Mapping*. Unpubl. internal report (Parks, Conservation and Lands, ACT Government, Canberra).
- Walters C 1986. *Adaptive Management of Renewable Resources* (Macmillan: New York).
- Ward J E and Ingwersen F 1988. *Checklist of Vascular Plant Species in the Tidbinbilla Nature Reserve*. Conservation Memorandum No. 8 (ACT Parks and Conservation Service, Canberra).
- Worboys G, Lockwood M and de Lacy T 2005. *Protected Area Management: Principles and Practice*. 2nd Edit. (Oxford University Press, South Melbourne).
- Wright WD 1923. *Canberra* (John Andrew, Canberra).
- Zylstra P 2006. *Fire History of the Australian Alps: Prehistory to 2003* (Australian Alps Liaison Committee).

