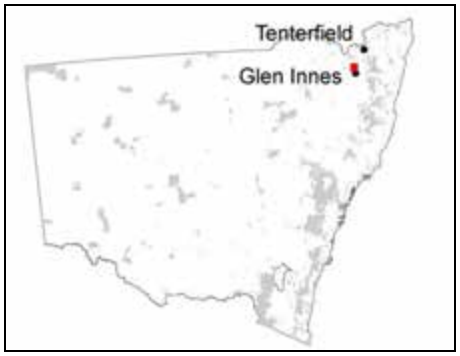
Office of Environment & Heritage
NSW National Parks & Wildlife Service

Plan of Management

Fladbury State Conservation Area



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Plan of Management

NSW National Parks and Wildlife Service

December 2012

This plan of management was adopted by the Minister for the Environment on 19th December 2012.

Acknowledgments
The NPWS acknowledges that Fladbury State Conservation Area is in the traditional country of the Ngarrabul Aboriginal people.

This plan of management is based on a draft plan prepared by staff of the Northern Tablelands Region of the NSW National Parks and Wildlife Service (NPWS), part of the Office of Environment and Heritage, Department of Premier and Cabinet.

For additional information or any inquiries about this park or this plan of management, contact the NPWS Glen Innes Area Office, PO Box 281, 68 Church Street, Glen Innes, NSW, 2370 or by telephone on 02 6739 0700.

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Foreword

Fladbury State Conservation Area is located 23 kilometres north of Glen Innes. It was reserved in 2006 and has an area of 122 hectares.

Fladbury State Conservation Area contains an unusual mix of vegetation species in old growth condition and an area of the White Box Yellow Box Blakely's Red Gum Woodland Endangered Ecological Community. Several threatened and endangered animal species have been recorded near the SCA and are likely to occur within it. The reserve has no legal public access.

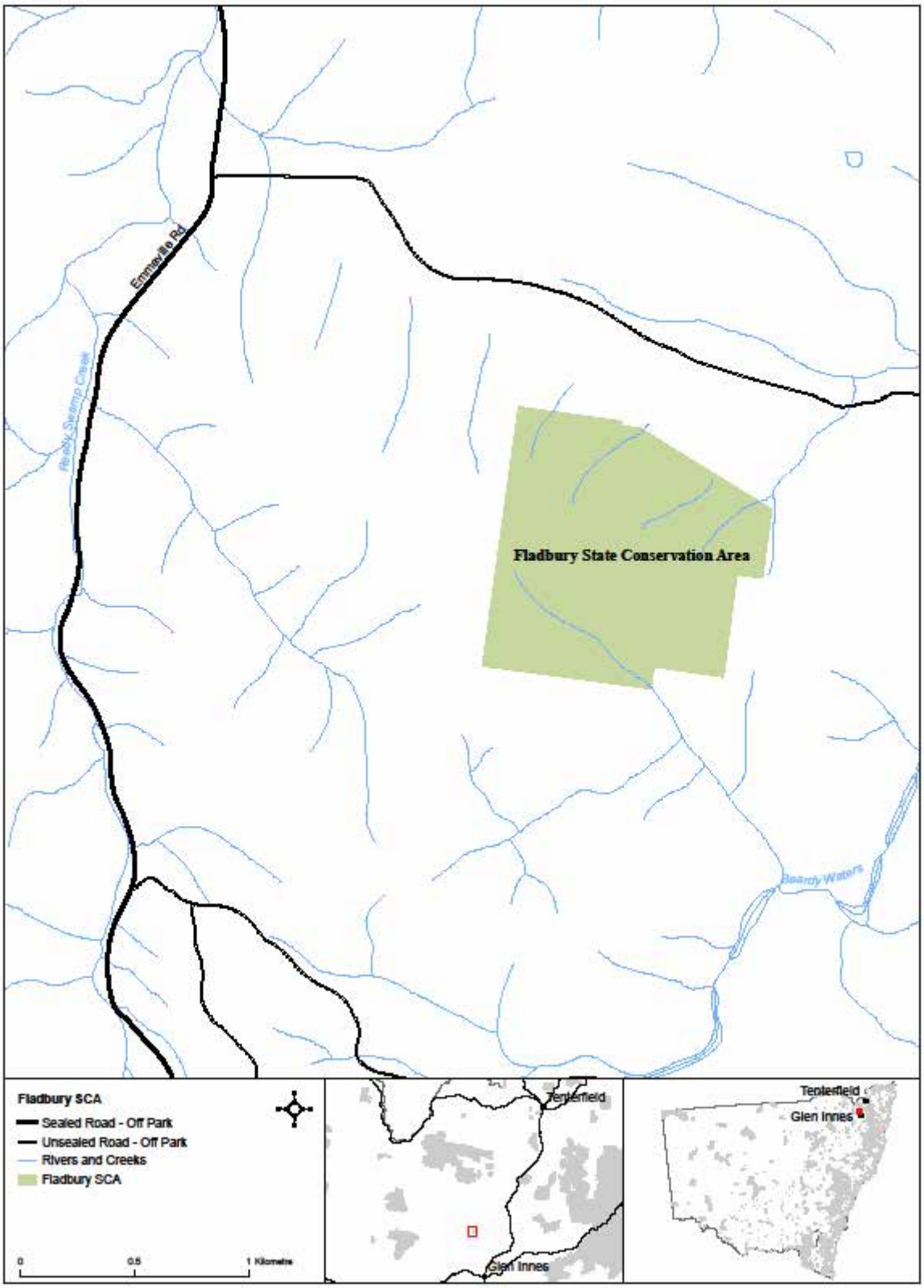
The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each state conservation area. A draft plan of management for Fladbury State Conservation Area was placed on public exhibition from 28 October 2011 to 30 January 2012. The submissions received were carefully considered before adopting this plan.

The plan contains a number of actions to achieve the NSW 2021 goal to protect our natural environment, including providing for protection of threatened species and biodiversity by allowing forest regrowth and minimising threatening processes such as inappropriate fire regimes and pest species.

This plan of management establishes the scheme of operations for Fladbury State Conservation Area. In accordance with section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.

Robyn Parker MP
Minister for the Environment

Map 1. Fladbury State Conservation Area



1. 1. Introduction

1.1 Location, gazettal and regional setting

Features	Description
Fladbury State Conservation Area	
Location	Fladbury State Conservation Area (the SCA) is located 23 kilometres north of Glen Innes, east of the Emmaville/Glen Innes Rd and midway between Rummerys Hill and Fladbury Mountain. There is no legal public access to the SCA as it is surrounded by private property.
Area	The SCA has an area of 122 hectares.
Reservation Date	The SCA was dedicated under the *Forestry and National Parks Estate Act 1998* and gazetted in December 2006.
Previous Tenure	The SCA was formerly vacant crown land leased to an adjoining property for grazing purposes.
Regional Context	
Biogeographic Region	Fladbury SCA lies within the New England Tablelands Bioregion and is part of a network of reserves in the region, including nearby Severn River Nature Reserve, Torrington State Conservation Area, Kwiambal National Park and Kings Plains National Park. The SCA is part of an east-west mountain range with elevations ranging from 1000-1060 metres above sea level. The SCA is identified as key fauna habitat and part of a regional wildlife corridor.
Surrounding Land Use	The SCA is surrounded by private properties used for grazing. The vegetation of the properties to the south, east and west of the SCA remains in a relatively undisturbed state. The property to the west is a fully fenced private deer hunting sanctuary. The land adjoining the northern boundary has been extensively cleared for grazing and contains little remnant native vegetation.
Other Authorities	The SCA is within the geographical area of the Glen Innes Severn Shire Council, the Border Rivers-Gwydir Catchment Management Authority, the Glen Innes Local Aboriginal Land Council and the New England Livestock Health and Pest Authority.

1.2 Statement of significance

Fladbury State Conservation Area is considered to be of significance for its:

Biological Values:

- the SCA is identified as key fauna habitat and is within a major regional habitat corridor;
- the vegetation within the SCA is in good old growth condition, contains an unusual mix of species and one endangered ecological community; and
- several threatened and endangered animal species have been recorded near the SCA and are likely to occur within it.

Catchment Values:

- the SCA lies within the Macintyre River catchment and contributes to water quality in the nearby Beardy River.

2. Management Context

2.1 Legislative and policy framework

The management of State Conservation Areas in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act) and Regulation, the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the National Parks and Wildlife Service (NPWS).

Other legislation, strategies and international agreements may also apply to management of the area. In particular, the *Environmental Planning and Assessment Act 1979* (EPA Act) may require assessment of environmental impact of works proposed in this plan. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) may apply in relation to actions that impact on matters of National Environmental Significance, such as migratory and threatened species listed under that Act.

A plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, the plan must be carried out and no operations may be undertaken in relation to the lands to which the plan relates unless the operations are in accordance with the plan. This plan will also apply to any future additions to Fladbury State Conservation Area. Should management strategies or works be proposed in future that are not consistent with this plan, an amendment to the plan will be required.

2.2 Management purposes and principles

State Conservation Areas

State conservation areas are reserved under the NPW Act to protect and conserve areas that:

- contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance;
- that are capable of providing opportunities for sustainable visitor or tourist use and enjoyment, the sustainable use of buildings and structures, or research; and
- are capable of providing opportunities for uses permitted under other provisions of the Act.

Under the Act (section 30G), state conservation areas are managed to:

- conserve biodiversity, maintain ecosystem functions, protect natural phenomena and maintain natural landscapes;
- conserve places, objects and features of cultural value;
- provide for the undertaking of uses permitted under other provisions of the NPW Act (including uses permitted under section 47J such as mineral exploration and mining), having regard to the conservation of the natural and cultural values of the state conservation area;
- provide for sustainable visitor or tourist use and enjoyment that is compatible with conservation of the area's natural and cultural values and with uses permitted in the area;
- provide for sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to conservation of the area's natural and cultural values and with other uses permitted in the area; and
- provide for appropriate research and monitoring.

Land is reserved as a state conservation area primarily where mineral values preclude reservation as another category. The NPW Act requires a review of the classification of state conservation

areas every five years in consultation with the Minister administering the *Mining Act 1992*. A review was undertaken in November 2008 in which the status of Fladbury State Conservation Area remained unchanged.

In the long term it is intended for Fladbury State Conservation Area to become a nature reserve, and therefore management of the state conservation area will also be guided by the management principles for nature reserves (refer section 30J of the NPW Act) as far as possible.

2.3 Specific management directions

In addition to the general principles for the management of state conservation areas (refer to Section 2.2), the following specific management directions apply to the management of Fladbury SCA:

- Protect threatened species and conserve biodiversity, by allowing forest regrowth and minimising threatening processes such as inappropriate fire regimes and pest species;
- Maintain habitat corridor linkages with the SCA and the surrounding landscape;
- Encourage research into the ecological and conservation significance of this relatively undisturbed tablelands forest ecosystem;
- Implement the Reserve Fire Management Strategy; and
- Control introduced plant and animal species in accordance with the Regional Pest Management Strategy.

3. Values

This plan aims to conserve both natural and cultural values of Fladbury State Conservation Area. The location, landforms and plant and animal communities of an area have determined how it has been used and valued by both Aboriginal and non-Aboriginal people. These values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people.

3.1 Geology, landscape and hydrology

The topography of the SCA centres around one major hill which is located centrally within the SCA. The northern face of the hill consists largely of loose, exposed rock and four minor gullies which drain to the north of the SCA. The headwaters of a major gully bisect the southern part of the conservation area and drains away in a south easterly direction into the Beardy River, one kilometre from the eastern boundary of the SCA.

The SCA is part of the Emmaville Volcanics formation from the Permian period and consists mainly of felsic extrusive rock types (predominantly rhyolites and rhyodacites). Yellow and grey podzolics are the dominant soil types within the SCA (NPWS 2004). The shallow and stony nature of these soils makes them especially susceptible to erosion, however the relatively undisturbed state of the SCA means that the soil profile is mostly intact.

3.2 Native plants and animals

The vegetation in the SCA can be generally categorised as New England Blackbutt complex. Four vegetation communities have been identified within the SCA (NPWS 2004):

- Silver wattle (*Acacia neriifolia)* and black she-oak (*Allocasuarina littoralis*) shrubland is well represented on the northerly aspects of the SCA.
- Silvertop stringybark (*Eucalyptus laevopinea*) - orange gum (*E. prava*) - narrow leaved ironbark (*E. crebra*) woodland is also well represented on the northerly aspects of the SCA. An unusual mix of species occurs within this community including those mentioned above and Tenterfield woollybutt (*E. banksii*) and Blakely's red gum (*E. blakelyi*). The understorey is dominated by black she-oak and silver wattle, with winged broom-pea (*Jacksonia scoparia*), blunt beard heath (*Leucopogon muticus*) and *Pimelea neo-anglica* in the shrub layer. Many-flowered mat rush (*Lomandra multiflora*) and speargrass (*Austrostipa* spp*.)* dominate the sparse ground layer.
- New England blackbutt (*E. andrewsii*) and silvertop stringybark shrubby open forest dominates the southerly aspects of the SCA and the saddle to the west of the high point. The shrub layer is represented by fringed wattle (*Acacia fimbriata*) and *Leucopogon lanceolatus* and the ground layer includes species such as snow grass (*Poa sieberiana*) and blady grass (*Imperata cylindrica*).
- Box-woodland is the fourth community identified and occurs in the major gully running to the south east of the SCA. Yellow box (*E. melliodora*) and Tenterfield woollybutt (*E. banksii*) represent this community. This vegetation community has been identified as part of the White Box Yellow Box Blakely's Red Gum Woodland Endangered Ecological Community (EEC) listed under the TSC Act, commonly referred to as Box-Gum Woodland (NPWS 2004) and is listed as critically endangered under the EPBC Act. Intact sites such as this one contain a high diversity of plant species, including the main tree species, additional tree species, some shrub species, several climbing plant species, many grasses and a very high diversity of herbs.

No threatened flora species have been identified within Fladbury State Conservation Area to date. Two plant species identified as vulnerable under the TSC Act, the narrow-leaved black peppermint (*Eucalyptus nicholii*) and austral toadflax (*Thesium australe*) have however been recorded nearby

and there is suitable habitat for them in the SCA. A comprehensive flora survey has not been undertaken in the SCA.

The majority of the SCA appears to have had no fire for at least 20 years (NPWS 2004). The absence of fire as well as the limited disturbance to the vegetation means that over half of the SCA is considered to be in old growth condition. The remainder can be divided between disturbed mature forest and young growth stages. The presence of hollow bearing trees and ground logs adds to the habitat value of the SCA.

A fauna survey has not been conducted within Fladbury SCA and the NPWS ATLAS of NSW Wildlife revealed no fauna records. A number of animals listed under the TSC Act have however been recorded within a 10 kilometre radius of the SCA and may be present in the SCA. These species are identified in Table 1 below. The SCA forms part of a network of wildlife corridors linking the eastern fall country to western parts of the northern tablelands. It is also identified as an area of key wildlife habitat.

Table 1. Threatened fauna recorded within 10 kilometres of the SCA.

Common Name	Scientific Name	Legal Status
Brush-tailed rock-wallaby	*Petrogale penicillata*	Endangered*#<∞
Tusked frog	*Adelotus brevis*	Endangered*#<
Booroolong frog	*Littoria booroolongensis*	Endangered*#<
Spotted tailed quoll	*Dasyurus maculatus*	Vulnerable*<
Koala	*Phascolarctos cinereus*	Vulnerable*<∞
Glossy black cockatoo	*Calyptorhynchus lathami*	Vulnerable*<
Diamond firetail	*Stagonopleura guttata*	Vulnerable*<
Speckled warbler	*Pyrrholaemnus saggitatus*	Vulnerable*<
Brown treecreeper	*Climacteris picumnus*	Vulnerable*<
Barking owl	*Ninox connivens*	Vulnerable*<
Blue-billed duck	*Oxyura australis*	Vulnerable*<

* Status under TSC Act
# Status under the EPBC Act.
< PAS Priority Actions endorsed for this species.
∞ Recovery Plan endorsed under TSC Act.
Source: NPWS ATLAS of NSW Wildlife

Strategies for the recovery of threatened species, populations and ecological communities have been set out in a state-wide Threatened Species Priorities Action Statement (PAS). As shown in Table 1, there are currently 11 threatened animal species found within 10 kilometres of the park for which PAS priority actions have been endorsed. Individual recovery plans may also be prepared for threatened species to consider management needs in more detail. Recovery plans have been prepared for the koala and the brush-tailed rock wallaby.

Issues

A number of key threatening processes are relevant to the management of plants and animals within the SCA, particularly in relation to its position within the landscape. These include:

- high frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition;
- invasion of native plant communities by exotic perennial grasses;
- competition and grazing by the feral European rabbit (*Oryctolagus cuniculus*);
- herbivory and environmental degradation caused by feral deer (*Dama* and *Cervus* spp.);
- predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*); and
- predation by the feral cat (*Felis catus*) and the European red fox (*Vulpes vulpes*).

Feral animal threat abatement plans and the PAS actions identified in Table 2 Section 4.1 will also be consulted when managing native animals within the SCA.

Desired outcomes

- Populations of significant plant and animal species and ecological communities are conserved.
- Habitat and corridor connectivity with surrounding land is maintained.
- Negative impacts on significant plant and animal species are minimised.

Management response

- Implement relevant strategies in the Priorities Action Statement and recovery plans for threatened species, populations and ecological communities present in the SCA.
- Undertake flora and fauna surveys of the SCA, particularly for threatened species, to determine whether they are present.
- Encourage the retention and enhancement of native vegetation and corridors on public and private lands adjacent to the SCA.

3.3 Aboriginal and historic heritage

Fladbury SCA lies within the traditional country of the Ngarrabul people. The land, water, plants and animals within a landscape are central to Aboriginal spirituality and contribute to Aboriginal identity. Aboriginal communities associate natural resources with the use and enjoyment of foods and medicines, caring for the land, passing on cultural knowledge, kinship systems and strengthening social bonds. Aboriginal heritage and connection to nature are inseparable and need to be managed in an integrated manner across the landscape.

No Aboriginal heritage items or places have been identified within the SCA to date, however, a modified tree has been recorded three kilometres from the north eastern boundary which suggests that other sites may exist in the area.

While the NSW Government has legal responsibility for the protection of Aboriginal objects and places, the NPWS acknowledges the right of Aboriginal people to make decisions about their own heritage. It is therefore policy that Aboriginal communities be consulted and involved in the management of Aboriginal sites, places and related issues and the promotion and presentation of Aboriginal culture and history.

Cultural heritage comprises places and items that may have historic, scientific, aesthetic and social significance to present and future generations. The NPWS conserves the significant heritage features located in NSW parks and reserves. Conservation involves identifying, assessing, protecting and maintaining the important cultural and heritage values of landscapes, resources, places and objects.

Following European settlement of the Northern Tablelands in the 1830s, sheep and cattle grazing expanded throughout the region. Extensive mining also occurred in the region in the latter part of the 1800s, centred around the town of Emmaville, 20 kilometres north of the SCA. Although at one time there were over thirty tin mines in the Emmaville area, no mining sites or other heritage items have been located in the SCA to date.

Issues

There have been no cultural heritage surveys of the SCA to date.

Desired outcomes

- Aboriginal places and values are identified and protected.
- Aboriginal people are involved in management of the Aboriginal cultural values of the SCA.

- Negative impacts on cultural heritage values are minimised.
- Understanding of the cultural values of the SCA is improved.

Management response

- Record Aboriginal and historic sites and assess their significance.
- Undertake archaeological surveys and cultural assessments prior to all works with the potential to impact on Aboriginal sites or values.
- Encourage further research into the Aboriginal and historic cultural heritage values of the SCA with the Glen Innes LALC and other relevant community organisations.

3.4 Visitor use and access

Fladbury State Conservation Area receives very little visitation as the SCA is surrounded by private property and there is no legal access or public vehicle access. There are no visitor facilities within the SCA.

Issues

- There is no legal access to the SCA therefore visitor use cannot be encouraged.

Desired outcomes

- Visitor use of the SCA is appropriate and ecologically sustainable.
- Secure permanent legal access for NPWS staff to the SCA.

Management response

- No visitor facilities will be provided in the SCA and visitation will not be promoted.
- Investigate options for permanent legal access to the SCA.

4. Issues

4.1 Pest species

Pest species are plants and animals that have negative environmental, economic and social impacts and are most commonly introduced species. Pests can have impacts across the range of SCA values, including impacts on biodiversity, cultural heritage, catchment and scenic values. Pest species are recognised as a major threat to the SCA's most important values.

The Northern Tablelands Region Pest Management Strategy (NPWS 2007) identifies pest species across the region's parks and details priorities for control (including actions listed in the PAS and Threat Abatement Plans (TAPs) prepared under the TSC Act). The overriding objective of the pest management strategy is to minimise adverse impacts of introduced species on biodiversity and other reserve and community values whilst complying with legislative responsibilities. The pest management strategy also identifies where other site or pest specific plans or strategies need to be developed to provide a more detailed approach.

High priority pest species for the SCA are listed below (refer to Table 2). All of these pest species have been identified as key threatening processes and have an impact on the biodiversity and habitat values of the SCA (refer to Section 3.2).

Table 2: Weed and pest animals recorded in or near Fladbury SCA.

Common name	Scientific name	Comment
Weeds		
African lovegrass	*Eragrostis curvula* -	Minor infestations along SCA boundary.
Coolatai grass	*Hyparrhenia hirta* -	Throughout the area, not yet identified in the SCA.
Whiskey grass	*Andropogon virginicus* -	Infrequent sightings in SCA, more common on nearby properties.
Pest Animals		
Deer	*Dama* and *Cervus* spp. -<	Infrequently observed on the very northern edge of the SCA, mainly on adjacent grazing land.
Feral cats	*Felis catus* ->^<	Rare sightings recorded in SCA, mainly on adjacent land.
Feral pigs	*Sus scrofa* ˜->^<	Scattered transient populations in the SCA, mainly on adjacent grazing land.
Foxes	*Vulpes vulpes* ->∞^<	Rare sightings recorded in the SCA, mainly on adjacent grazing land.
Rabbits	*Oryctolagus cuniculus* ˜->^<	Rare sightings recorded in the SCA, mainly on adjacent grazing land.
Common Starling	*Sturnus vulgaris*	Scattered populations recorded mainly along the SCA boundary and in adjacent grazing land.
Common name	**Scientific name**	**Comment**
Weeds		
African lovegrass	*Eragrostis curvula* -	Minor infestations along SCA boundary.
Coolatai grass	*Hyparrhenia hirta* -	Throughout the area, not yet identified in the SCA.
Whiskey grass	*Andropogon virginicus* -	Infrequent sightings in SCA, more common on nearby properties.
Pest Animals		
Deer	*Dama* and *Cervus* spp. -<	Scattered transient populations.
Feral cats	*Felis catus* ->^<	Individual sightings recorded.
Feral pigs	*Sus scrofa* ˜->^<	Scattered transient populations.
Foxes	*Vulpes vulpes* ->∞^<	Individual sightings recorded.
Rabbits	*Oryctolagus cuniculus* ˜->^<	Minor scattered populations.

˜ Declared "pest" under the *Rural Lands Protection Act 1998*
- Key Threatening Process under TSC Act
> Key Threatening Process under EPBC Act
∞ Threat Abatement Plan endorsed for this species under TSC Act
^ Threat Abatement Plan endorsed for this species under EPBC Act
< PAS Key Threatening Process Priority Actions endorsed for this species

Vertebrate pest numbers in the SCA are unknown and further research into their population sizes and distribution is required. Large mobs of deer are regularly observed on the Rangers Valley Feedlot property, less than three kilometres to the north and northeast of the SCA and the neighbouring property is also a private deer hunting sanctuary, therefore it is likely that deer utilise the SCA at various times throughout the year. In the absence of further surveys the impact of deer and other feral species upon natural values is unknown.

Weeds are generally the result of disturbance to natural ecosystems from past land uses and have the potential to adversely affect biodiversity of native communities. Introduced perennial grasses have been recorded in and near the SCA and further weed identification and monitoring work is required.

Due to the small size of the SCA and its close proximity to neighbours, consultation with neighbours regarding pest control programs and maintenance of boundary fencing to prevent stock incursions is a high priority. There is no legal access to the SCA and currently access to the reserve for NPWS management programs is via verbal agreement with the southern neighbour.

Desired outcomes

- Pest plants and animals are controlled and where possible eliminated.
- Negative impacts of introduced species on SCA values are minimised.

Management response

- Manage pest species in accordance with the Northern Tablelands Region Pest Management Strategy.
- Survey and monitor the SCA to determine the presence and extent of pest species and identify biodiversity most at risk. Treat any new outbreaks where possible.
- Seek the cooperation of neighbours in implementing weed and pest control programs. Undertake control in cooperation with the New England Livestock Health and Pest Authority.
- Continue to control stock intrusions into the SCA in cooperation with neighbours.
- Seek to formalise an access agreement for vehicular access for NPWS management purposes to the reserve.

4.2 Fire

The primary fire management objectives of the NPWS are to protect life and property and community assets from the adverse impacts of fire, whilst managing fire regimes to maintain and protect biodiversity and cultural heritage.

Fire is a natural feature of many environments and is essential for the survival of some plant communities. However, inappropriate fire regimes can lead to loss of particular plant and animal species and communities, and high frequency fires have been listed as a key threatening process under the TSC Act.

Fire appears to have been absent from the majority of the SCA for at least 20 years (NPWS 2004). A lightning strike started a small fire in the south-west corner of the reserve in 2007. Approximately four hectares was burnt. Although the SCA is within the prescribed vegetation fire regime, the predominant northerly aspect and the time since fire would make the SCA vulnerable in a wildfire event.

A separate fire management strategy which defines the fire management approach for the SCA has been prepared (NPWS 2008). The fire management strategy outlines the recent fire history of the SCA, key assets within and adjoining the reserve including sites of natural and cultural heritage value, fire management zones and fire control advantages such as management trails and water supply points. It also contains fire regime guidelines for conservation of the SCA's vegetation communities.

NPWS maintains cooperative arrangements with surrounding landowners and the Rural Fire Service (RFS) and is actively involved with the Northern Tablelands Bush Fire Management Committee (BFMC). Cooperative arrangements include fire planning, fuel management and information sharing. Hazard reduction programs, ecological burning proposals and fire trail works are submitted annually to the BFMC.

The area around Rummery's Hill, including Fladbury SCA, is classified as extreme risk in the Northern Tablelands Bushfire Risk Management Plan.

There is no infrastructure within the SCA except fencing and gates. Some of the surrounding properties have agricultural infrastructure that are vulnerable to damage by wildfire.

Desired outcomes

- Negative impacts of fire on life, property and the environment are minimised.
- The potential for spread of bushfires on, from, or into the SCA is minimised.
- Fire regimes are appropriate for conservation of native plant and animal communities.

Management response

- Implement the Fladbury SCA Reserve Fire Management Strategy.
- Continue to be involved in the Northern Tablelands BFMC and maintain cooperative arrangements with local RFS brigades, other fire authorities and surrounding landowners in regard to fuel management and fire suppression.
- Suppress unplanned fires in the SCA in accordance with the Reserve Fire Management Strategy.
- Manage the reserve to protect biodiversity in accordance with the identified fire regimes in the Reserve Fire Management Strategy.

4.3 Isolation and fragmentation

The area surrounding the SCA has been extensively cleared, which has resulted in a high loss of biodiversity and fragmentation of habitat. The SCA itself is relatively small and isolated and subject to edge effects making it more vulnerable to disturbances. Adjacent land uses place pressures on parks through the incursion of non-native plant and animal species.

Cooperative arrangements with neighbours are important for the management of access, fire, weeds and pest animals. Additionally, long term conservation of biodiversity depends upon the protection, enhancement and connection of remaining habitat across the landscape, incorporating vegetation remnants on both public and private lands.

The SCA is part of an extensive system of wildlife corridors linking the eastern escarpment country with western habitat. Nearby vegetated areas contribute to the habitat values of the SCA and provide ecological corridors to other vegetated areas. Maintaining the integrity of the remaining habitat within the SCA and where possible, linking this to adjacent areas of vegetation to facilitate wildlife corridors, is important in ensuring the long term viability of the SCA's biological values. The SCA is part of the Great Eastern Ranges Initiative which is a vegetated corridor that aims to improve connectivity of mountain ecosystems running the length of eastern Australia.

Desired outcome

- The negative impacts of isolation and fragmentation are reduced.

Management response

- Encourage protection and enhancement of native vegetation on public and private lands in the vicinity of the reserve.

4.4 Climate change

Anthropogenic climate change has been listed as a key threatening process under the TSC Act. Projections of future changes in climate for NSW include higher temperatures, increasing water temperatures, more intense but possibly reduced annual average rainfall, increased temperature extremes and higher evaporative demand. These changes are likely to lead to greater intensity and frequency of fires, more severe droughts, reduced river runoff and water availability, regional flooding and increased erosion.

Climate change may significantly affect biodiversity by changing population size and distribution of species, modifying species composition, and altering the geographical extent of habitats and ecosystems. The potential impact of climate change is difficult to assess since it depends on the compounding effects of other pressures, particularly barriers to migration and pressure from feral animals. Species most at risk are those unable to migrate or adapt, particularly those with small population sizes or with slow growth rates.

Programs to reduce the pressures arising from other threats, such as habitat fragmentation, invasive species, bushfires and pollution, will help reduce the severity of the effects of climate change.

Desired outcomes

- The effects of climate change on natural systems are reduced.

Management response

- Maintain cooperative arrangements with nearby landholders in order to continue existing fire, pest and weed management programs, to increase the SCA's ability to cope with future disturbances, including climate change.

5. Implementation

This plan of management establishes a scheme of operations for the SCA. Implementation of this plan will be undertaken within the annual program of the NPWS Northern Tablelands Region.

Identified activities for implementation are listed in Table 3. Relative priorities are allocated against each activity as follows:

- **High** priority activities are those imperative to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.
- **Medium** priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.
- **Low** priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.
- **Ongoing** is for activities that are undertaken on an annual basis or statements of management intent that will direct the management response if an issue that arises.

This plan of management does not have a specific term and will stay in force until amended or replaced in accordance with the NPW Act.

Table 3: Actions

Management response	**Priority***
5.1 On-Park Ecological Conservation	**Plan ref: 3.2/4.3/4.4**
6.1.1 Undertake flora and fauna surveys of the SCA, particularly for threatened species to determine whether they are present.	Medium
5.1.2 Encourage the retention and enhancement of native vegetation and corridors on public and private lands adjacent to the SCA.	Low Ongoing
5.1.3 Maintain cooperative arrangements with nearby landholders in order to continue existing fire, pest and weed management programs, to increase the SCA's ability to cope with future disturbances, including climate change.	High Ongoing
5.2 Threatened Species	**Plan ref: 3.2**
5.2.1 Implement relevant strategies in the Priorities Action Statement and recovery plans for threatened species, populations and ecological communities present in the SCA.	High Ongoing
5.3 Aboriginal and Historic Heritage	**Plan ref: 3.3**
5.3.1 Record Aboriginal and historic sites and assess their significance.	Medium Ongoing
5.3.2 Undertake archaeological surveys and cultural assessments prior to all works with the potential to impact on Aboriginal sites or values.	High Ongoing
5.3.3 Encourage further research into the Aboriginal and cultural heritage values of the SCA with the Glen Innes LALC and other relevant community organisations.	Medium Ongoing
5.4 Visitor Services	**Plan ref: 3.4**
5.4.1 No visitor facilities will be provided in the SCA and visitation will not be promoted.	Medium
5.4.2 Investigate options for permanent legal access to the SCA.	Medium
5.5 Pest Species	**Plan ref: 4.1**
5.5.1 Manage pest species in accordance with the Northern Tablelands Region Pest Management Strategy.	High Ongoing
5.5.2 Survey and monitor the SCA to determine the presence and extent of pest species and identify biodiversity most at risk. Treat any new outbreaks where possible.	Medium
5.5.3 Seek the cooperation of neighbours in implementing weed and pest control programs. Undertake control in cooperation with the New England Livestock Health and Pest Authority.	Medium Ongoing

Management response	Priority*
5.5.4 Continue to control stock intrusions into the park in cooperation with neighbours.	Medium Ongoing
5.5.5 Seek to formalise an access agreement for vehicular access for NPWS management purposes to the reserve.	High
5.6 Fire Management	**Plan ref: 4.2**
5.6.1 Implement the Fladbury SCA Reserve Fire Management Strategy.	High Ongoing
5.6.2 Continue to be involved in the Northern Tablelands BFMC and maintain cooperative arrangements with local RFS brigades, other fire authorities and surrounding landowners in regard to fuel management and fire suppression.	High Ongoing
5.6.3 Suppress unplanned fires in the SCA in accordance with the Reserve Fire Management Strategy.	High Ongoing
5.6.4 Manage the reserve to protect biodiversity in accordance with the identified fire regimes in the fire management strategy.	Medium Ongoing

References

National Parks and Wildlife Service (2004), *Unpublished Report by NPWS Ranger Peter Croft for NPWS Vacant Crown Land Assessment Reserve No. 96711 – "Coolabah" Fladbury,* Department of Environment and Climate Change, NSW, Hurstville.

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National Parks and Wildlife Service (2008), *Northern Tablelands Region Fladbury State Conservation Area Fire Management Strategy (Type 2)*, Department of Environment and Climate Change, NSW, Hurstville.