



ForestrySA

KUITPO FOREST RESERVE

**MOUNT PANORAMA, KNOTT
HILL AND CHRISTMAS HILL**

NATIVE FOREST RESERVES



MANAGEMENT PLAN

ISO 14001 Certified
ISO 9001 Certified
AS 4708 Certified



Government
of South Australia

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FOREWORD

Mount Panorama Knott Hill and Christmas Hill Native Forest Reserves Management Plan

The Mount Panorama, Knott Hill and Christmas Hill Native Forest Reserves Management Plan has been prepared by ForestrySA to clearly state the purpose and objectives of the reserves. The areas covering Mount Panorama and Christmas Hill Native Forest Reserves were proclaimed as Native Forest Reserves under the *Forestry Act 1950* on 15 March 2001. The area covering Knott Hill Native Forest Reserve was gazetted as a Native Forest Reserve on 8 July 2004.

The reserves will be managed according to this Management Plan, which includes work to be undertaken under the proposed management program and relevant biological data.

The administrative details contained in this document are current as at date of signing.

I hereby approve the Mount Panorama, Knott Hill and Christmas Hill Native Forest Reserves Management Plan for implementation.

A handwritten signature in black ink, appearing to read 'Brian Farmer', with a long horizontal stroke extending to the right.

Brian Farmer
**CHIEF EXECUTIVE
FORESTRYSA**

30/6/ 2006

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1. INTRODUCTION

Mount Panorama, Knott Hill and Christmas Hill Native Forest Reserves (NFRs) are areas of remnant native vegetation located in the Kuitpo Forest Reserve in the Southern Mount Lofty Ranges. The total area of the three reserves is 453.3 hectares - Mount Panorama being 61.1 hectares, Knott Hill is 82.3 hectares and Christmas Hill is the largest area of 309.9 hectares. The reserves are recognised by ForestrySA as significant remnants of the original vegetation in the area.

This management plan provides a statement of purpose for the areas based upon an assessment of its natural features, management philosophies and community use.

The Management Program (Section 5) identifies priority tasks for the reserves. The natural resources data (Appendices 1-2) provides the latest available information on flora and fauna.

The Management Program will be reviewed at 5-yearly intervals and the long-term objectives at 10-yearly intervals, as management objectives and actions may change in response to: new or additional information about the area; the achievement of management programs; impacts resulting from public use or land use in surrounding areas; or impacts from natural events.

1.1 Purpose of Reserve

The Mount Panorama, Knott Hill and Christmas Hill NFRs will be managed and protected to conserve biodiversity, by sustaining indigenous plant and animal communities as enduring and dynamic ecosystems.

ForestrySA currently manages approximately 128 000 hectares of Crown Land in South Australia dedicated as Forest Reserves under the *Forestry Act* 1950. Approximately 23 000 hectares of this land is native forest, woodland or enclosed wetland, located in the Southern Flinders Ranges, the Mount Lofty Ranges and the Lower South East of South Australia.

1.2 Location

The Mount Panorama and Knott Hill NFRs are located approximately 6 kms west of the township of Meadows (Figures 1 and 1a). Mount Panorama NFR comprises Sections 204 and 205 (Figure 2). Both reserves are in the Hundred of Kuitpo, in the Local Government area of the City of Onkaparinga. Knott Hill NFR comprises Sections 206, 207 and 209 (Figure 2).

The reserves are identified by the name Kuitpo Forest on the 1:50 000 topographic mapsheet Noarlunga 6627-IV and Part 6527-I, GR883053¹ (Mount Panorama). and GR895038¹ (Knott Hill). The reserves are integrated with an area of pine plantation managed by ForestrySA and bounded by Peter Creek Road (to the west), Wicks Road (to the south) and Old Coach Road (to the north).

¹ AGD84

The reserves are also shown in the CFS Map Book, Mount Lofty Ranges, Part Regions 1, 2 & 3 (Edition 1, 2000,) GR055880² – Map 120D (Mount Panorama) and GR035885² – Map 120B (Knott Hill).

Christmas Hill NFR is located approximately 8 kms south-west of Meadows, via Brookman Road, and forms part of the Kuitpo Forest Reserve. The reserve is integrated with pine plantations bounded by Brookman Road on the west and Blackfellows Creek Road to the east. Its southern boundary is contiguous with Kyeema Conservation Park (Figures 1 and 1a).

The reserve comprises Sections 245, 246, 247, 248, 251, 252, 253, 275 and 285 In the Hundred of Kuitpo in the District Council of Alexandrina (Figure 2). It is shown as Kuitpo Forest Reserve on the 1:50 000 topographic map, Noarlunga 6627-IV and Part 6527-I, and Willunga 6627-III, GR290974³. It is also shown in the CFS Map Book, Mount Lofty Ranges, Part Regions 1, 2 & 3 (Edition 1, 2000), GR895975⁴ – Map 120B.

The reserves, compartmental sub-division and areas of the compartments are shown in Figure 3 and 3a.

1.3 Significant Values

The following attributes of the reserves are considered to be of significant conservation and cultural value:

Conservation

- The reserves conserve remnant native vegetation characteristic of the Mount Lofty Ranges region, where it is estimated less than 15% of the original vegetation remains (Long 1999).
- The reserves are IUCN (International Union for the Conservation of Nature and Natural Resources 2005) Category IV reserves. Category IV reserves are defined as a habitat or species management areas, a protected area managed mainly for conservation through management intervention to ensure the maintenance of habitats and/or to meet the requirements of species.
- The reserves comprise a total area of 453.3 hectares, conserving diverse habitats and species of flora and fauna. The structural and floristic diversity of the reserves provide habitat for many species of fauna.
- Knott Hill NFR provides unique habitat for over 20 species of native orchid, including the main Southern Lofty population of *Caleana major* (Large duck-orchid), rated Vulnerable for the State and Southern Lofties and *Paracaleana minor* (Small duck-orchid), rated Vulnerable for the State and Endangered for the Southern Lofties.

² GDA94

³ Datum AGD84

⁴ Datum GDA94

- Christmas Hill NFR contains one compartment, CH17, where mature trees provide hollows as nesting and breeding sites for fauna.
- Mount Panorama NFR is adjacent to a Heritage Agreement area of approximately 50 hectares, creating a larger reserved linked area of native vegetation. Christmas Hill NFR is contiguous with Kyeema Conservation Park to the south, which is 347 hectares, creating a total of over 800 hectares of protected remnant vegetation.
- The reserves provide some unique remnant examples of changes in vegetation associations that occur with changing slope and soil type.
- The reserves contain 300 identified native plant species, including 63 with conservation significance.
- The reserves conserve areas of Stringybark, Cup gum, Rough-bark manna gum, Pink gum and Blue gum plant associations not well represented in this area of the Mount Lofty Ranges.
- The surrounding plantations provide additional habitat for fauna and many insectivorous and seed eating bird species, thereby creating a much larger area for their conservation.

Water Quality

- The native vegetation of the reserves contributes to the enhancement of water quality flowing within the catchment area. Christmas Hill and Knott Hill flow south into the Finniss River, which drains into Lake Alexandrina, while Mount Panorama is within the Onkaparinga catchment.

Cultural Heritage

- According to Tindale (1974), the reserves are part of the land once used by the Peramangk Aboriginal people, and most likely the Kurna Aboriginal people, as the approximate boundary of both these groups is close to the reserve areas.

Many archeological deposits have cultural significance for Aboriginal people today and many may have scientific significance. Certain sites have landforms that are more likely to contain evidence of Aboriginal occupation than others, such as claypans; rocky outcrops; dunes; and bush or forested areas. A site may also be important for historic events that occurred there. Such places may contain no archeological evidence, but can have great significance to Aboriginal people.

The South Australian Government is responsible for the protection and preservation of sites, objects and remains of sacred, ceremonial, mythological or historical significance to Aboriginal people. Known sites of significance to Aboriginal archaeology, anthropology, history and tradition are listed on the Register of Aboriginal Sites and Objects (*Aboriginal Heritage Act 1988*).

There are no sites recorded on the Register at the time of writing this management plan for any of the reserves.

Recreation

- The reserve provides opportunities for a range of recreation-based activities, being accessible to large urban and rural population centres. The Heysen Trail passes through Knott Hill and Christmas Hill NFR (Figure 1a). This walking trail extends from Cape Jervis in the south to the Flinders Ranges in the north of the State. There are also local walking trails with the forest reserves.

1.4 Access

Pedestrian access to marked trails and fire tracks is permitted during daylight hours, except on days when a Total Fire Ban is imposed, or where erected signs or notices restrict access to specified areas.

Vehicle access to Knott Hill NFR is via Peter Creek Road at the intersection of Knott Hill Road, approximately 4 kms north-west of the Kuitpo Forest Information Centre. Mount Panorama NFR is also accessible via Peter Creek Road, approximately 5.5 kms north-west of the Information Centre. Vehicle access to Christmas Hill NFR is via Christmas Hill or Brookman Connor Roads, approximately 3 kms south-west of the Kuitpo Forest Information Centre

Access through NFRs by ForestrySA vehicles and vehicles of contractors employed by ForestrySA on existing tracks and firebreaks, is permitted for management purposes, including fire prevention and suppression, and pest plant and animal control. Access through NFRs for ForestrySA plantation harvesting transport may be permitted if an acceptable route can be found that minimises disturbance to the biodiversity values of the reserve.

Vehicular access to the public is restricted by provision of the Regulations under the *Forestry Act, 1950*.

1.5 Administration

The area is under the local management control of the Kuitpo Forest Information Centre, located on Brookman Road, approximately 8 kms south-west of Meadows. Correspondence can be addressed to: ForestrySA, GPO Box 2284, Adelaide, 5001.

Figure 1

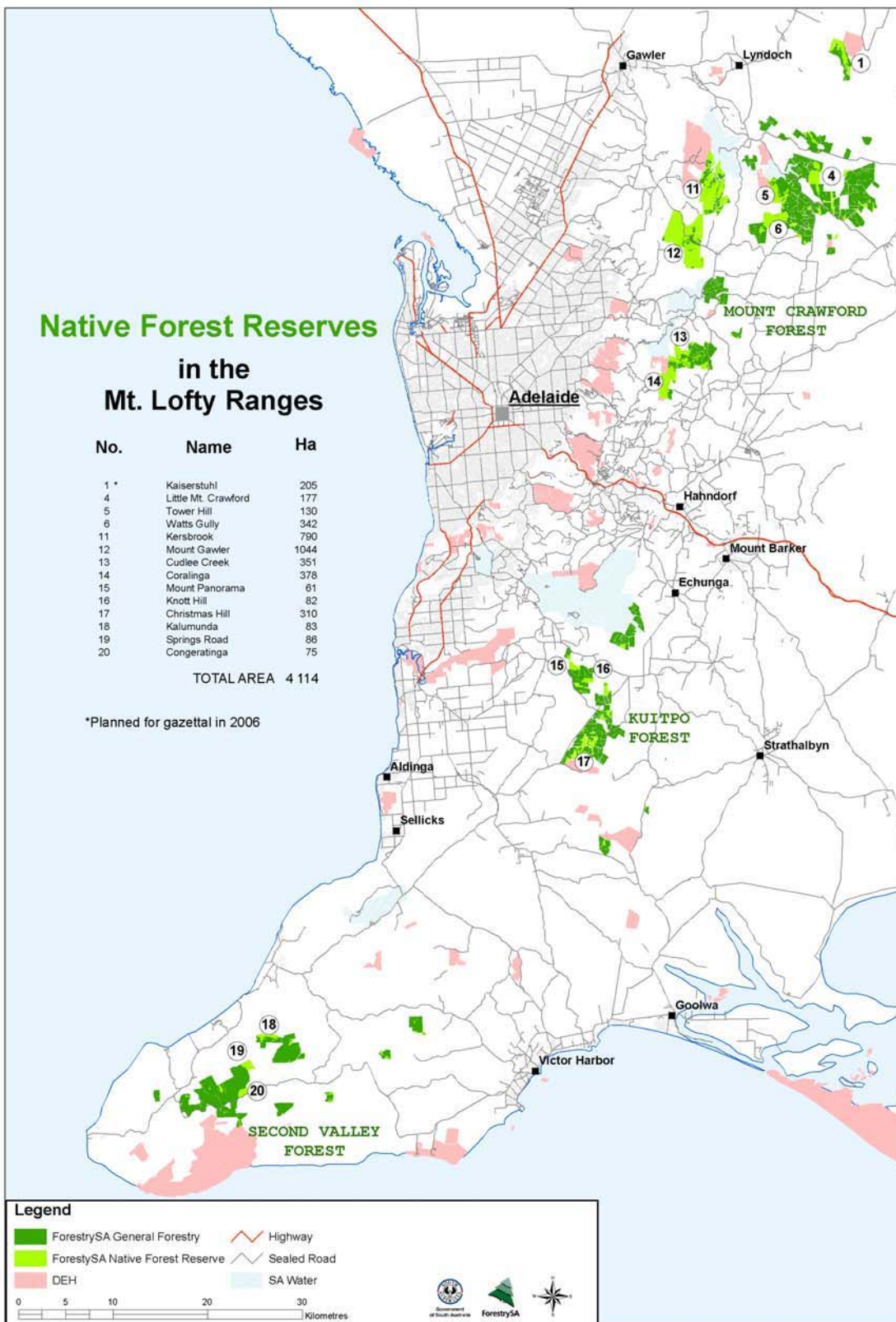
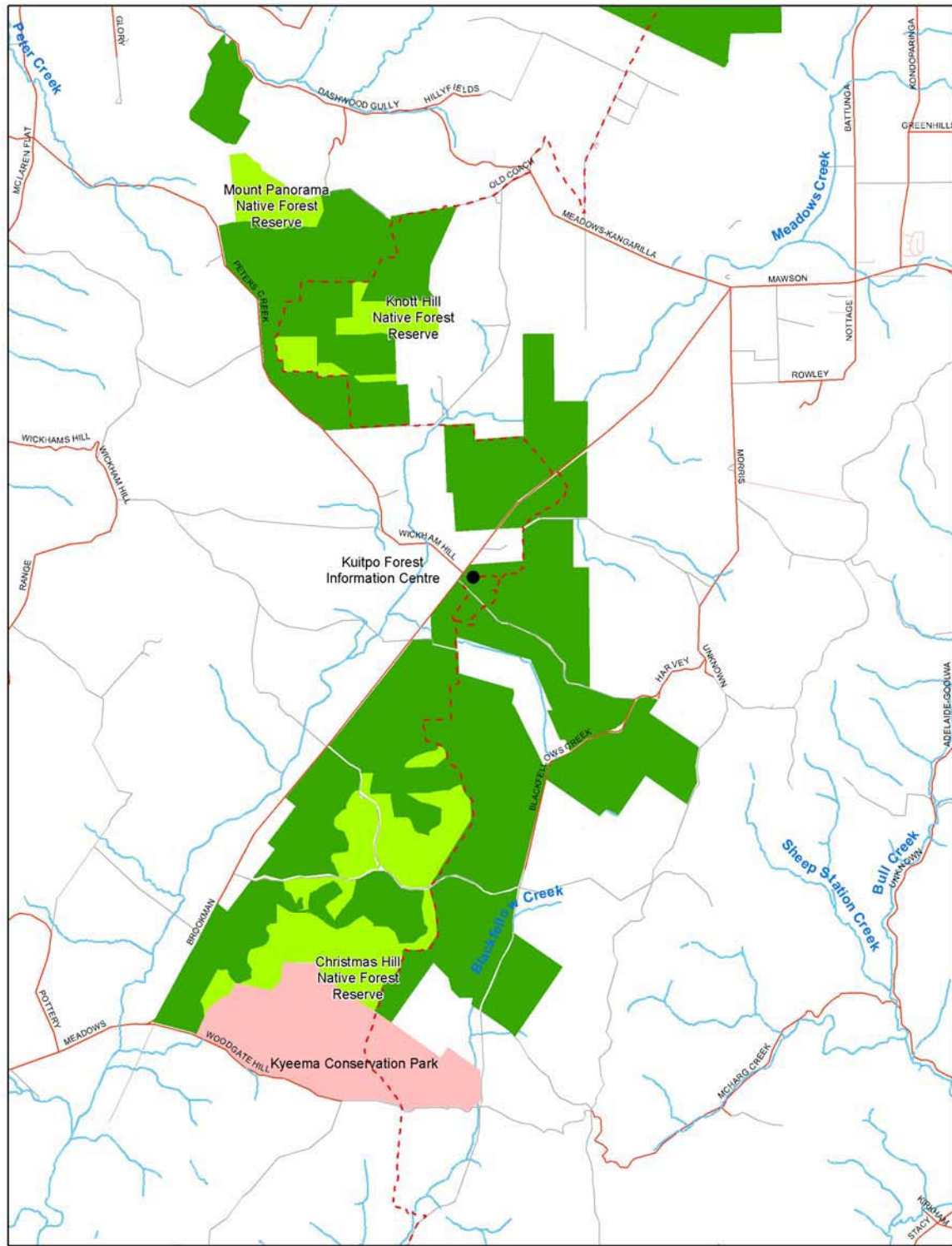


Figure 1a



- General Forestry
- Native Forest Reserve
- DEH
- Heysen Trail

**Kuitpo Native Forest Reserves
Native Forest Reserves Location Map**

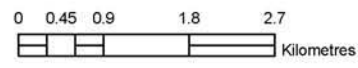
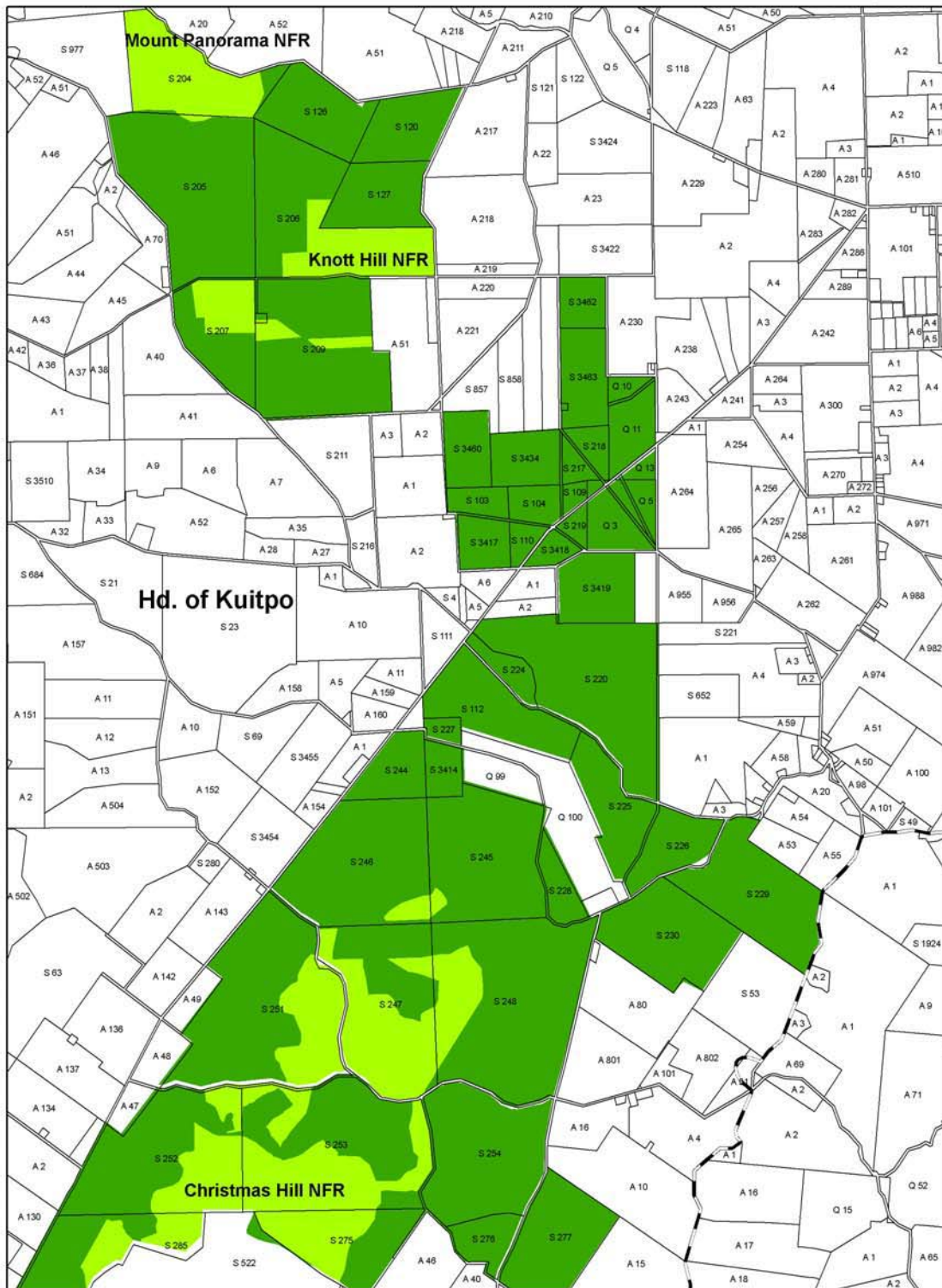


Figure 2



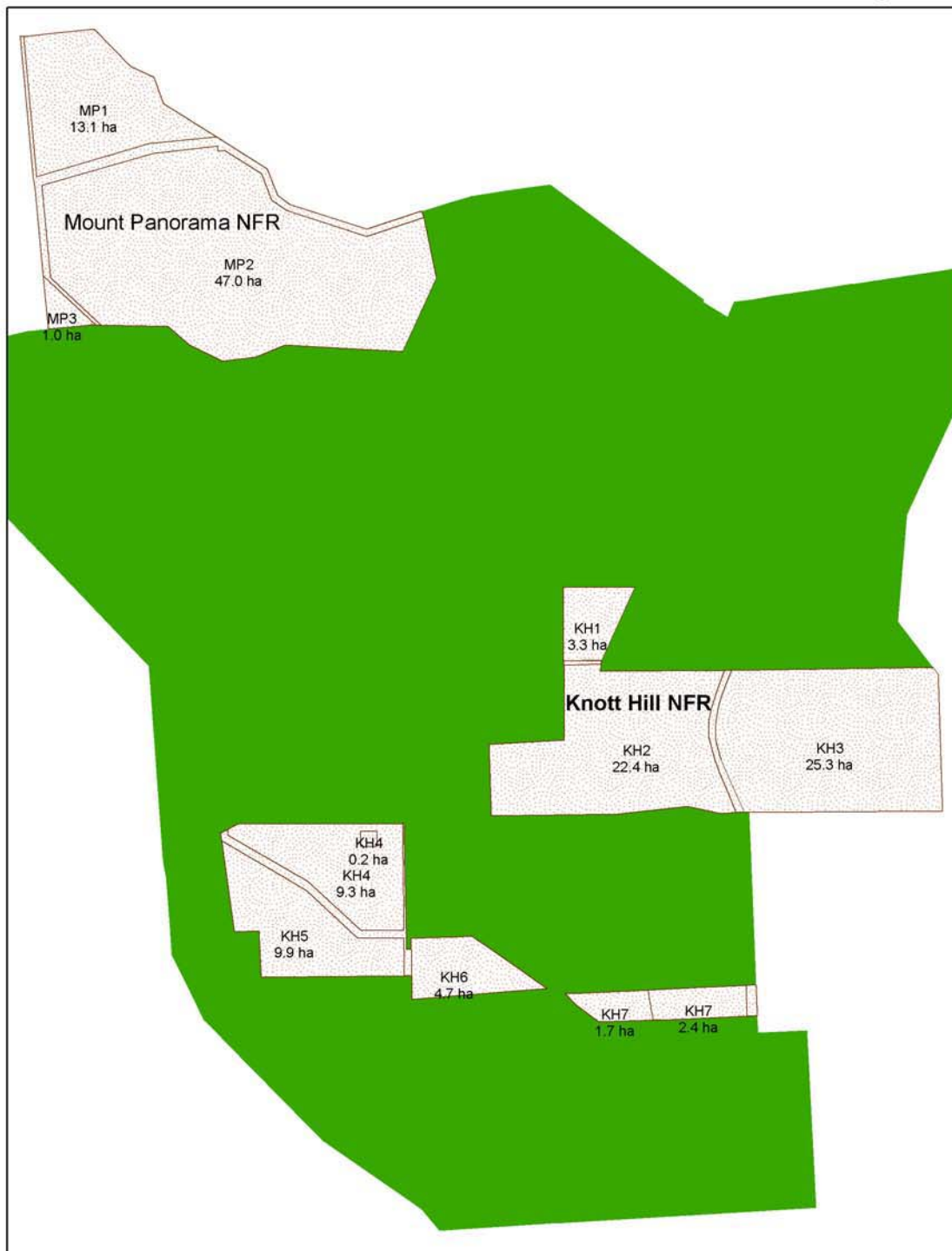
**Kuitpo Native Forest Reserves
Cadastral Boundaries**

- General Forestry
- Native Forest Reserve



1 0.5 0 1
Kilometres



Figure 3



Kuitpo Native Forest Reserves
Mount Panorama & Knott Hill
Compartment Codes

-  General Forestry
-  Native Forest Reserve

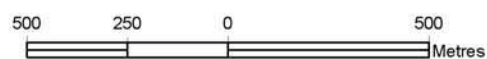


Figure 3a

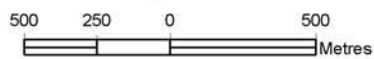


General Forestry
 Native Forest Reserve

Kuitpo Native Forest Reserves

Christmas Hill

Compartment Codes



2. LEGAL DESIGNATION, PLANNING AND PROTECTION

2.1 Legislative Protection of Flora and Fauna

ForestrySA complies with the provisions of the following Acts:

2.1.1 Forestry Act 1950

This Act provides for the declaration of Native Forest Reserves for the purpose of conserving native flora and fauna. Regulations under this Act enable enforcement of measures to protect native forest reserves.

The Act states in respect to forest reserves and native forest reserves:

3. (1) *The Governor may by proclamation -*

(b) for purposes relating to the conservation, development and management of land supporting native flora and fauna, declare a forest reserve, or part of a forest reserve, to be a native forest reserve.

(c) assign a name to a forest reserve, or a native forest reserve.

3. (2) *A proclamation declaring a forest reserve or part of a forest reserve to be a native forest reserve shall contain a statement of the purposes for which the native forest reserve is established.*

9A *Notwithstanding any other provision of this Act, the Corporation shall manage a native forest reserve having regard to the purposes for which it was established and shall endeavour to ensure that no operations are undertaken on the reserve that are inconsistent with those purposes.*

2.1.2 National Parks and Wildlife Act 1972

The object of this Act is to provide legislative framework for the management and protection of native plants and animals throughout South Australia.

For any activity that involves the taking of native plants and/or animals to facilitate scientific research, permits must be obtained from both the Department for Environment and Heritage (DEH), and ForestrySA.

2.1.3 Environment Protection and Biodiversity Conservation Act 1999

This Commonwealth Act commenced on 16 July 2000 and replaced the following Commonwealth statutes: *Environment Protection (Impact of Proposals) Act 1974; Endangered Species Protection Act 1992; National Parks and Wildlife Conservation Act 1975; World Heritage Properties Conservation Act 1983; and Whale Protection Act 1980.*

It provides a national framework for environment protection through a focus on protecting matters of national environmental significance and on the conservation of Australia's biodiversity.

2.1.4 Native Vegetation Act 1991

The object of this Act is to control clearance, and to facilitate management, of native vegetation in South Australia.

Under the Act, in most circumstances, a range of activities defined as clearing may not occur without the prior consent of the Native Vegetation Council (Sections 27 to 29). This includes the prescribed use of fire or selective cutting of trees for restoration purposes. Both of these activities may be approved as part of a management plan - compliance to this is mandatory (Regulation 3(h)).

2.1.5 Native Title (South Australia) Act 1994

Native Title is used to describe the rights and interests of Aboriginal and Torres Strait Islander people in land and waters, according to their traditional laws and customs. Native Title may exist in places where indigenous people continue to follow their traditional laws and customs, and have maintained a link with their country. Under Federal legislation the *Native Title Act 1993* was enacted to:

- provide for the recognition and protection of native title;
- establish ways in which future dealings affecting native title may proceed and to set standards for those dealings;
- establish a mechanism for determining claims to native title; and
- provide for, or permit, the validation of past acts, and intermediate period acts, invalidated because of the existence of native title.

Any development proposed for a reserve must be valid in terms of the *Native Title Act 1993*.

There is currently one native title application over the reserves. The Kaurna People have a registered native title claim filed with the National Native Title Tribunal (Tribunal file no: SC00/1; filed 25/10/2000). There is currently no determination or Indigenous Land Use Agreement (ILUA) over the reserve.

2.1.6 Aboriginal Heritage Act 1988

The *Aboriginal Heritage Act* provides for the protection and preservation of sites of significance to Aboriginal archaeology, anthropology, history and tradition, and items of sacred, ceremonial, mythological or historical significance to Aboriginal people. ForestrySA manages Aboriginal heritage in accordance with its Aboriginal Cultural Heritage Policy, which reflects the requirements of the *Aboriginal Heritage Act 1988*.

2.1.7 Natural Resources Management Act 2004

The *Natural Resources Management Act 2004* replaces the *Animal and Plant Control Act 1986*, *Soil Conservation and Land Care Act 1989* and the *Water Resources Act 1997*. The Act provides a more integrated and sustainable structure for managing our State's natural assets (soils, water, plants and animals and the diversity of our landscapes and ecosystems). The Act established the Natural Resources Management Council as the statewide peak body for natural resources management and the framework has resulted in the creation of eight Natural Resource Management (NRM) regions across the State each with a regional NRM Board. The Kuitpo reserves are within two natural resource management regions deemed as 'joint management areas' – the Adelaide and Mount Lofty Ranges NRM region and the Murray Darling Basin NRM region (Department of Water, Land and Biodiversity Conservation 2005).

2.2 Planning

Broadscale clearance of native vegetation has not been possible since the introduction of State legislation in the 1980s. As a consequence, ForestrySA identified difficulties undertaking commercial forestry operations while meeting the requirements of the *Native Vegetation Act 1991*. Most issues were related to scattered native plants within plantations. This was addressed in 1992 when the Native Vegetation Council and ForestrySA agreed to a process for the zoning of Forest Reserves, supported by the Ministers responsible for Environment and Forestry. This process defined areas that are to be managed for commercial forestry (General Forestry Zone), for conservation (Conservation Zone) and areas of former plantations, managed to increase their conservation value (Transition Zone). ForestrySA manages these zones to reflect the requirements of the *Native Vegetation Act 1991*.

Plans are prepared for commercial softwood forestry operations, conservation areas, community use and fire prevention. Native Forest Management Plans are specific for each of the larger conservation management areas designated due to their ecological significance. There are 14 NFRs in the Mount Lofty Ranges for which management plans are being prepared. In 2005 ForestrySA commenced planning for development of a Five Year Revegetation Plan and Corridor Strategy for the Mount Lofty Ranges, which will identify priority sites for revegetation and linkages. In addition to the NFR plans there are ten grassy woodland plans for high conservation value areas within forest reserves in the Mount Lofty Ranges, which provide detailed prescriptive actions for management. Annual operational work plans are also prepared for NFRs targeting pest plants and animals.

There is regular engagement with other agencies and community projects to implement integrated work programs and to foster cross agency and community relationships. A list of relevant agencies and programs is listed in Appendix 4a.

Planning for community use covers both commercial plantation forest and native forest areas. Community use of forest reserves is not restricted to specific areas, but determined according to compatibility and level of impact. Community use considerations specific to individual areas of native forest are included in the respective Native Forest Management Plans.

The Forest District Fire Prevention Plan considers all forest land and the nearby surrounding areas. Fire prevention considerations for individual areas of native forest are included in their respective management plans. Forest fire prevention considerations are also included in a wider context within the District Bushfire Prevention Plan, a requirement of the *Fire and Emergency Services Act 2005* (replaced the *Country Fire Services Act 1989*).

2.3 Native Forest Management Objectives

ForestrySA manages some of the few remnant areas of native forest, woodland and wetland predominantly in the higher rainfall areas of South Australia, together with their associated fauna. These areas contribute significantly to the natural assets of the State and have been managed as Forest Reserves under the *Forestry Act 1950* by the former Woods and Forests Department (now ForestrySA) which was established in 1882.

ForestrySA's primary management objective for areas of native forest under its control is to conserve and enhance native flora and fauna, and preserve biodiversity for the long-term benefit of the South Australian community.

In managing native forests, ForestrySA:

- recognises that the size and relative isolation of many native forest reserves increases the risk of species loss due to fire, drought or disease, where isolation is a barrier to re-colonisation;
- recognises that native forest reserves contribute to the conservation of valuable remnant habitats for many species and provide, in part, a representation of land cover before clearance and other changes following European settlement;
- recognises ecosystems are dynamic and will continue to change with time;
- will make decisions for the management of ecosystems, communities and processes, based on the information available;
- will use the least disturbed sites as scientific benchmark areas to monitor changes due to natural succession, and as reference sites for restoration of adjacent disturbed areas;
- will vary management programs, as required, to maximise biological diversity; and
- may involve regional co-ordination with neighbouring landowners (private individuals, Local Government and other Government agencies) to maximise the conservation value of an area.

Prior to the early 1950s, most areas were disturbed by activities such as timber cutting, grazing, fire and invasion by introduced plants and animals. Since then, most of these areas have remained relatively undisturbed. Compared with other remnant areas of native vegetation in South Australia, those managed by ForestrySA are often less disturbed due to their long history of consistent land tenure.

Areas of native vegetation may require specific management prescriptions to achieve management objectives, depending upon their disturbance histories. ForestrySA is committed to the following broad management objectives for the native forests under its control for the benefit of the people of South Australia.

- Conservation Management – the reserves will be managed for the long-term conservation of native plant and animal communities, and will incorporate research and monitoring. Options for species re-introduction programs will be evaluated. Natural processes will be maintained by the use of approved prescribed burning when and where appropriate.
- Community Use – community use of areas will be managed consistent with the reserve’s primary conservation purpose, and understanding and awareness of the reserve’s natural values will be promoted.
- Protection – the reserves will be managed to minimise impacts from human-induced or natural disturbances.
- Rehabilitation – sites that have been extensively degraded by human-induced or natural activity will be rehabilitated.
- Stakeholder Involvement – community groups and volunteers (through ForestrySA’s Friends of the Forests program) that can contribute to the implementation of the management program will be identified, and their involvement facilitated. Integrated planning and management will be promoted.

2.4 Regional Management Framework

The Knott Hill, Mount Panorama and Christmas Hill NFRs Management Plan will complement existing, or proposed, plans for conserving the natural biodiversity of the region, including:

- The Greater Mount Lofty Parklands – ‘Yurrebilla’; Yurrebilla extends from Cox Scrub Conservation Park and Kuitpo Forest in the south to Kaiser Stuhl Conservation Park and Mount Crawford Forest Reserve in the north. It incorporates a mix of publicly owned land and voluntarily nominated privately owned areas. The Greater Mount Lofty Parklands management strategy has been designed to work with existing programs, and State Government Agencies will be responsible for key aspects of an integrated program, ensuring a consistent framework of policy, planning and implementation.
- NatureLinks; The South Australian Government committed itself to a landscape-scale approach to biodiversity conservation in 2002 to ensure strategic planning and actions at large scales and over extended timeframes. Three major landscape programs have been identified across the state, including ‘Cape Borda to Barossa’ involving integrated biodiversity management across Kangaroo Island, Backstairs Passage and through the Mount Lofty Ranges.

- Biodiversity Plan for the Greater Mount Lofty Region; regional Biodiversity Plans provide biodiversity information for a region including threatened species, threatened plant communities, threats to biodiversity, significant habitats and key biodiversity areas. They are developed in consultation with the community and are a strategic framework for conservation of biodiversity in a region with biodiversity values, targets, performance criteria, and 5 year actions and outcomes identified. The regional Biodiversity Plan for the Greater Mount Lofty Region is currently being developed.
- State Natural Resource Management Plan; was released in mid 2006. It will provide a strategic policy framework for the management of the State's natural resources. The plan is directed at achieving the objectives of the *Natural Resources Management Act 2004*. An integrated approach to natural resource management recognises that all aspects of our natural resources must be managed together, rather than as separate, unconnected parts; ensures that community members and organisations, and state and local government agencies work together in a co-ordinated way; and considers social, economic and environmental aspects as important factors in managing our natural resources.

2.5 Forest Management System

The ForestrySA Forest Management System (FMS) covers all processes involved in the management and protection of native forests, the provision of services to private forestry and establishment, maintenance and harvesting of the plantation estate. The FMS provides a framework for sound environmental management and aids in the reduction of environmental impacts.

ForestrySA has been independently certified to the international environmental standard ISO 14001. The standard includes a continuous improvement cycle, a process of enhancing environmental management to achieve improvements in overall performance in line with the ForestrySA Environmental Policy.

In 2004 ForestrySA achieved Australian Forestry Standard certification AS 4708. This independently audited standard has been developed under the auspices of Standards Australia to measure sustainable forest management. In achieving this certification ForestrySA has demonstrated very high standards of ecosystem protection and soil and water quality control, which provides reassurance to customers, and other stakeholders of environmentally sound business and forest management practices.

3. NATURAL RESOURCES

The natural history of the area has been broadly described in the "*Natural History of the Adelaide Region*" published by the Royal Society of SA in 1976. More detail is provided in Lamprey and Mitchell (1979), "*Biogeographical and Landform Survey of Fleurieu Peninsula, South Australia.*"

3.1 Climate

The area typically experiences a temperate climate with cool, wet winters and warm, dry summers.

Records extracted for the region from the Commonwealth Bureau of Meteorology (www.bom.gov.au) for 30 years between 1971 and 2001, show a mean annual rainfall of 854 mm, with the highest mean of 130 mm occurring in July. This figure is similar to the mean rainfall of 120 mm in the same month over the period 1920 -1950 (Rix and Hutton 1953).

Despite a relatively high rainfall, intermittent droughts have been recorded since the early 1900s, particularly in 1914, 1939, 1956 and 1983, which also coincided with extensive bushfires. Severe droughts are declared by State Government and predominately relate to rainfall deficiency that is among the lowest five per cent within a given time period. Summers are generally characterised by temperatures above 30°C, but with short periods above 35°C. Daily winter temperatures average around 14°C.

Detailed climatological information has been collected at the Kuitpo Forest Information Centre since 1930.

3.2 Physical Environment

3.2.1 Geomorphology and Soils

The first soil survey in the region was undertaken for forestry purposes in the declared area of Kuitpo Forest Reserve, and was conducted by Teale in 1918. Subsequent soil surveys described the soils in relation to the major vegetation associations. The soils of the Hundred of Kuitpo were surveyed and published by Rix and Hutton in 1953.

In 1977, Laut et. al. described Mount Panorama and Knott Hill NFRs as occurring in two environmental associations within the Peninsula Uplands Environmental Region: the Mount Wilson and Mount Compass environmental associations.

Mount Panorama NFR is typical of the Mount Wilson association. The area encompassing the reserve has a ridge and valley land type, comprising steep ridges and hills on interbedded meta-sediments and limestone. The reserve is situated on the northern flanks of a section of the Willunga Scarp where rejuvenated block faulting has apparently interacted with prior drainage patterns, probably determined by earlier tectonic movements. The oldest geological formations found in the reserve are Precambrian rocks.

The dominant soils of Mount Panorama NFR are skeletal in type with low fertility on the upper slopes and eroded Myponga Sands on the lower slopes. There is also evidence of glaciation in the exposed areas of the creekline due to the presence of varying sized smooth, rounded pebbles and stones up to 50 kg that have been covered by alluvial sands.

Knott Hill NFR is typical of the Mount Compass association. The area encompassing the reserve is briefly described by Laut et. al. (1977), as hills and ridges of tillite and schist with isolated laterite-capped tableland remnants, broad flood plains and alleviated upland basins. The area has an erosional plain land type, where the former land surface has been reduced to a plain, primarily by stream erosion. The dominant soils of the reserve differ between compartments: KH1-KH3 are predominantly valley floor crabhole soils with inliers of Kuitpo gravelly sand on the highest points and transported Knott Hill sand; KH4-KH7 are predominantly Peters Creek sands, Myponga sands and Knott Hill sands. These differences in soil types are reflected in the different vegetation associations that are present.

In Christmas Hill NFR the majority of native vegetation occurs on the middle, upper slopes and crests of eroded lateritic (iron stone) ridges that were first described by Rix and Hutton in 1953. The soils have developed on remnants of the deformed Mount Lofty Penepplain and occur on flat and undulating ridges at the crests of the Eden and Clarendon Fault Blocks. The soils on the ridges are described as Kuitpo gravelly sandy loams with frequent outcropping of lateritic pebbles as soon as the soil is disturbed. The midslopes are predominantly Burbrook sandy loams with occasional occurrences of Kondoparinga loams. The lower slopes are Echunga sands with alluvial complexes on the valley floors.

3.2.2 Hydrology and Topography

All reserves occur approximately 300 to 370 metres above sea level. In Mount Panorama drainage lines flow north-west into Peter Creek, which drains into the Onkaparinga River. In Knott Hill and Christmas Hill drainage lines flow east and south respectively into Meadows Creek, eventually flowing south-east into the Finniss River, which drains into Lake Alexandrina (Figure 4).

3.3 Petroleum and Mining Resources

3.3.1 Petroleum Act 2000 and Mining Act 1971

These Acts regulate all activities relating to exploration and production. In regard to flora and fauna, there are requirements to avoid, or where not reasonably practicable, minimise environmental impacts. In this regard, impacts to native vegetation are permitted without requirement of consent under the *Native Vegetation Act 1991*.

The Mining Act 1971 states, in regard to forest reserves:

9. (1) *Subject to this section –*

(bb) *land that constitutes a forest reserve under the Forestry Act 1950;*

shall be exempt from mining operations in pursuance of this Act and, unless the land ceases to be so exempt, no miners right, claim, lease or licence shall authorise prospecting, exploring or mining upon such land (but this section does not prevent the pegging out of a claim upon such land).

There are currently no Mineral Exploration Licences or Petroleum Exploration Licences over the reserves, however there have been in the past. Exploration Licence information can be viewed online at the South Australian Resource Information Geoserver (SARIG) available at the Primary Industries and Resources SA website at www.pir.sa.gov.au.

3.4 Natural Environment

3.4.1 Vegetation

The vegetation communities of the management areas have been broadly described in various reports since 1918 and in more detail Specht in 1972. There is extensive general information in the publication, "*The Vegetation of South Australia*."

In 1984 ForestrySA undertook an extensive survey of selected areas of native forests. Two sites (Site 1 and Site 2) were established in Mount Panorama NFR and three in Knott Hill NFR (Site 1, Site 3 and Site 5). The locations of these survey sites is displayed in Figure 5. These sites have provided information about floristic composition of plant communities in each vegetation strata. A formal survey was undertaken by DEH in 1986, and a vegetation inventory taken by private collectors in 1987.

The majority of the area now known as Christmas Hill NFR, was managed as softwood plantation prior to the 1983 Ash Wednesday bushfire. No formal surveys have been carried out within Christmas Hill. However, a vegetation inventory was compiled for the reserve by DEH and is incorporated in the native plant species list in Appendix 1. A formal assessment of the vegetation in the Mount Lofty Ranges, by DEH, resulted in the establishment of a number of survey sites in Kyeema Conservation Park, adjacent the reserve.

Since the mid 1990s, the Native Orchid Society of South Australia has been monitoring the status of orchids in the Knott Hill NFR and adjacent pine plantations. There are healthy populations of *Caleana major* (Large duck-orchid) (Plate 1), which has a state Vulnerable conservation rating, and *Paracaleana minor* (Small duck-orchid), rated Vulnerable for the state and Endangered for the region. According to Bates and Weber (1990), the known largest remaining populations of *C. major* are located in ForestrySA Kuitpo forest reserves. Many other orchid species have been detected with some occurring on slashed firebreaks highlighting the value of maintaining these areas by appropriate slashing methods, at the right time of the year (Plate 2). The long-term viability of the plant populations may be affected if slashing occurs too early in the orchid growing season before the plants have been pollinated and the seed dispersed. Duck-orchids flower late in spring and into summer and may not be pollinated until late January. Slashing should therefore be restricted to late summer (end February) or early autumn (March onwards).



Plate 1: *Caleana major* (Large duck-orchid). Flower is approximately 2 cms diameter. Photo: I. Tanner.



Plate 2: Slashed firebreak within Knott Hill NFR, which supports a population of *Caleana major*. Photo: K. Richardson.

In Knott Hill NFR (Plates 3 and 4) where the drainage is eastward, *Eucalyptus obliqua* (Messmate stringybark) progresses into *E. fasciculosa* (Pink gum), *E. leucoxylon* (Blue gum) and finally *E. camaldulensis* (Red gum) as the soils become deeper and moister.

In Mount Panorama NFR (Plates 5 and 6), *E. obliqua* is the dominant overstorey tree species, occurring on the lateritic ridges, with occurrences of *E. cosmophylla* (Cup gum) in the shallower soils. This community dominates the western facing scarp of the Willunga Fault.



Plates 3 and 4: Knott Hill NFR.
Photos: K. Richardson.

Plates 5 and 6: Mount Panorama NFR
Photos: K. Richardson

Vegetation associations within Christmas Hill NFR range from Low Open Woodland to Stringybark Woodland with sclerophyllous understorey (Plates 7 and 8) . The vegetation is dominated by *Eucalyptus obliqua*, *E. Baxter*, *E. fasciculosa* and *E. cosmophylla*.

Due to the proximity of Christmas Hill NFR to Kyeema Conservation Park, it is generally expected that the plant species in the reserve could be regarded as an extension of those identified in the Conservation Park. However, incidental observations of plants in 1991, in areas originally plantation in the reserve detected 54 plant species, some of which were not recorded in Kyeema Conservation Park. The maintenance of slashed firebreaks adjacent to some compartments has further enhanced plant diversity within the reserve, with the absence of overstorey favouring growth of various native grasses and ground cover species.

All reserves have a typical sclerophyllous understorey comprising species such as *Xanthorrhoea semiplana*, *Hakea* spp., *Leptospermum* spp., *Lepidosperma* spp., *Platylobium obtusangulum*, *Isopogon ceratophyllus*, *Olearia* spp., *Pultenaea* spp. and *Hibbertia* spp. (Appendix 1).



Plate 7: Area of *Eucalyptus cosmophylla* understorey in Christmas Hill NFR.
Photo: K. Richardson.



Plate 8: *Eucalyptus obliqua* Woodland in Christmas Hill NFR. Photo: ForestrySA.

There are fungi recordings from field surveys undertaken in 1997 by P. Catcheside. While the survey areas were not located within the NFRs, but predominately in hardwood plantations close to the Kuitpo Information centre, the species recorded are included in Appendix 1a.

3.4.2 Introduced Plants

A survey of the occurrence and distribution of introduced plants in Mount Panorama NFR was conducted in 1996 (Machin & Dullaghan). The priority weeds for control are Blackberry (*Rubus fruticosus* agg.), Gorse (*Ulex europaeus*) and Ash (*Fraxinus rotundifolia*) that are concentrated along the creek lines in the south-west section of the reserve. The Ash trees located in compartment MP3, and spreading into intact native vegetation into compartment MP2, need immediate attention. *Watsonia bulbifera* occurs in small sections in the north-east section of the reserve.

Weed species detected in Knott Hill NFR include, Gorse, Blackberry, South African daisy (*Senecio pterophorus*), Dog rose (*Rosa canina*) and introduced pasture grasses.

In Christmas Hill NFR regeneration from the original softwood plantations (*Pinus radiata*) can be found throughout the reserve. However, a large proportion of compartment CH17 remains relatively free from pine regeneration. The density of pine regeneration has varied according to the intensity of the 1983 wildfire, which destroyed plantation trees and released seed. Most regeneration occurs in the moister drainage lines where the pines have successfully established, and where Gorse and Blackberry are also present. In 1992 the Native Vegetation Council approved a program of prescribed burning to manage pine regeneration.

Other introduced plants, which have the potential to seriously impact upon the biodiversity of Christmas Hill NFR are Salvation Jane (*Echium plantagineum*) and South African weed orchid (*Disa bracteata*). *Disa bracteata* competes with and

excludes smaller indigenous flora, including orchids, lilies and grasses. They are self-pollinating with each capsule containing hundreds of seed which can remain viable for at least seven years and, being miniscule, can be dispersed considerable distances by wind or water (Muyt 2001).

Blackberry and Gorse are Weeds of National Significance (WONS) as described by the National Weeds Strategy Executive Committee (2000). They both have the potential to form dense thickets that exclude all indigenous vegetation, and provide shelter to pest animals such as rabbits and foxes. They can, however, also provide important refuges for native animals in areas where alternative habitat may be limited and eradication of large areas should be staged. Weeds can also increase the fire hazard of infested bushland (Muyt 2001).

Wild pine persists in all reserves, predominantly along reserve perimeters, from adjacent commercial plantations. Programs to control wild pine, involving volunteers and/or professional contractors, are on going in all native forest reserves.

3.4.3 Fauna

Vertebrate research carried out within the management areas includes the following: In 2000, DEH included survey sites (NOA 02401, NOA 02501,) in Mount Panorama and Knott Hill, when conducting biological surveys throughout the Mount Lofty Ranges. In 1985, a survey was undertaken in both reserves by the Woods and Forests Department. Two sites in Mount Panorama NFR were established, known as Site 1 and Site 2, and three sites were established in Knott Hill NFR, known as Site 1, Site 3 and Site 5. These vertebrate survey sites correspond with the vegetation survey sites. Monitoring sites are displayed in Figure 5.

In 1980, a study on the effects of prescribed burning (primarily on fauna species) commenced in Christmas Hill which involved the Woods and Forests Department; the South Australian Mammal Club; South Australian Ornithological Association; and National Parks and Wildlife SA. The study involved the use of Kyeema Conservation Park (unburnt control) and the adjacent compartment, CH17, as the experimental site for prescribed burning. Sampling of all animal groups was carried out along transect lines, which crossed the boundary track between the two sites. Monitoring commenced twelve months before compartment CH17 received a hot prescribed burn in October 1981. Sampling continued to monitor the effects of re-colonisation from unburnt to burnt patches of vegetation. In 1983 the entire Christmas Hill area was burnt during the Ash Wednesday wildfire, which dramatically altered the study.

Birds

Bird species recorded from surveys have been detected in a wide variety of feeding and foraging niches, highlighting the value of these reserves as diverse habitat for birds (Appendix 2). Of particular significance is the occurrence of the Yellow-tailed black cockatoo (*Calyptorhynchus funereus*), Black-chinned honeyeater (*Melithreptis gularis*) and the Chestnut-rumped heathwren (*Calamanthus pyrrhopygius*) (detected only in Mount Panorama NFR), all considered Vulnerable in South Australia. The

cockatoos feed extensively upon pine-cone seeds sourced from adjacent plantations, but are also dependent upon native vegetation for other food sources, breeding and nesting hollows.

In 1984, in the Christmas Hill area, a survey was undertaken observing birds that had been individually marked and banded before the 1983 wildfire by Edington (1981). Most of the species banded before the wildfire were recorded one year later, indicating that some individuals can survive a very intense wildfire. Whether they survive for a longer period is dependent upon the rate of recovery of the vegetation, and the proximity of unburnt areas that provide both food and shelter.

In 1998, a study was done on birds detected within compartment CH17, (not burnt since 1983), and an adjacent area of Kyeema Conservation Park burnt in 1994. There was significant difference in the species detected, suggesting the importance of having and protecting areas with different fire histories. In 2001, a section of the Conservation Park was again burnt in wildfire. As a consequence of these two frequent wildfires, there has been significant impact on the structure and composition of the vegetation. Christmas Hill NFR is therefore an important area for the recolonisation of fauna into burnt areas as the vegetation recovers.

Several of the bird species recorded within the reserves are on the Birds for Biodiversity (2003) list of declining birds for the Mount Lofty Ranges. The Birds for Biodiversity project is a multi-species recovery program for declining birds. There are a total of 71 threatened, declining and locally extinct bird species in the Mount Lofty Ranges (Birds for Biodiversity 2003). The project aims to address bird decline through a range of research and habitat protection activities.

All of the reserves provide a variety of habitats ranging from low stringybark woodland, to more open regenerating red gum woodland. There is a mosaic of other habitats in the vicinity that link these areas of native forest. Different habitats are created by the pine plantations of varying ages and also the surrounding farmland, which is predominantly open woodland with scattered trees. Together these vegetation types enhance the overall habitat diversity of the general area between Mount Panorama in the north and Christmas Hill in the south.

Historical photographs recorded in the Woods and Forests Department Annual Reports from the early 1900's, suggest many of the trees in the management area would have been mature enough to provide an abundant and diverse supply of hollows. These are now scarce in all NFRs. Few eucalypts in the reserves will provide suitable nesting hollows in the near future. Regrowth in the reserves is approximately between 30 and 100 years old, and therefore very early in the process of creating new hollows. The long-term habitat value of the reserves for species such as Yellow-tailed black cockatoos and other smaller hollow dependent species, may be assisted by intervention to create new tree hollows faster than their natural production rates of between 150-300 years. An intervening option may be to install artificial nestboxes, known to be regularly used by Yellow-tailed black cockatoos on Kangaroo Island (J. van Weenan, pers. comm.), in addition to smaller nestboxes, which are being trialed in other NFRs.

In Christmas Hill NFR in 2000, a study was designed to evaluate the use and effectiveness of artificial nestboxes in attracting hollow-dependent fauna within the reserve. The project has involved the installation of 100 nestboxes to provide breeding and nesting sites for bird and mammal species. Compartments CH2, CH4, CH6, CH11, CH15 and CH16 have been selected as they do not contain trees mature enough to provide hollows. Nestboxes are also being installed in compartment CH17 to observe any preference between natural and artificial hollows.

This project was a joint effort between ForestrySA and Friends of the Forests volunteers, Reynella East Primary School, Baptist Community Services (Joblink and Work for the Dole Programs), and Urrbrae TAFE (Natural Resource Management students). Monitoring of the nesting boxes is carried out regularly by Baptist Community Services, supported by ForestrySA staff (see Plates 9-12).



Plates 9 – 12: Nestboxes constructed by Reynella East Primary School students and installed in Christmas Hill NFR by participants of the Baptist Community Services, Joblink and Work for the Dole Programs. Photos: G. Good/A. Moylan.

Mammals

Thirteen native mammal species have been recorded in the area of the reserves, plus numerous introduced species (Appendix 2). The most significant species detected is the Nationally Endangered Southern brown bandicoot (*Isoodon obesulus*), recorded in Christmas Hill NFR.

Trapping was conducted in Knott Hill and Mount Panorama NFRs in 1985 to determine the impacts on small ground dwelling mammals following the 1983 Ash Wednesday bushfire. The survey was conducted by the Woods and Forests Department and detected the Bush rat (*Rattus fuscipes*) and Yellow-footed antechinus (*Antechinus flavipes*). These species have also been recorded in Mount Panorama compartments MP1 and MP2, and are common, small terrestrial species found in dry sclerophyll forests. However, this survey work failed to record the Bandicoot, the Common Brushtail possum (*Trichosurus vulpecular*) and the Swamp rat (*Rattus lutreolus*).

The South Australian Mammal Club continued annual monitoring of small mammals in Christmas Hill NFR until 2000 as part of the monitoring for prescribed burning. It was found that the time taken for ground dwelling mammals to be recaptured varied. For example, by 1995, Antechinus had been detected for four years, whereas the Bush rat had been detected for eleven years. The Common ringtail possum (*Pseudochinus peregrinus*) was first detected one year after fire. Antechinus have recently been recorded using nestboxes in areas of Christmas Hill NFR.

In 2005 bandicoot diggings were confirmed in Kyeema Conservation Park, adjoining Christmas Hill NFR, during a survey across 32 sites in the Mount Lofty Ranges and Fleurieu Peninsula to clarify bandicoot distributions across the region (Long 2005). Walkers have also reported seeing 'bandicoot like animals' in Christmas Hill NFR. (K. Long pers comm.) Further monitoring for bandicoots is required to conclusively confirm presence.

Bats were surveyed in the Kuitpo area over two nights in late 2005 using an ANABAT recorder. The two survey sites were located close to the Kuitpo Forest Information Centre. Over 200 bat calls were registered and seven different bat species were recorded. The survey results are included in Appendix 2.

Reptiles and Amphibians

Twelve reptile and two amphibian species have been recorded for the reserves, including the Heath goanna (*Varanus rosenbergi*), recorded in Christmas Hill NFR, which has a Rare conservation rating for South Australia (Appendix 2). Other species detected include the Common grass skink (*Lampropholis guichenoti*), which can be readily seen active amongst leaf litter and grass, and two burrowing skinks, the Three-toed earless skink (*Hemiergis decresiensis*) and Bouganville's skink (*Lerista bouganvillii*), both frequently found under rocks and logs.

3.4.4 Introduced Animals

Introduced mammals recorded in the management areas include: Brown hare (*Lepus capensis*); European rabbit (*Oryctolagus cuniculus*); Fallow deer (*Cervus dama*); Goat (*Capra hircus*), Red fox (*Vulpes vulpes*) and the House mouse (*Mus musculus*) (Appendix 2).

Competition and land degradation by feral Goat and Rabbits, and predation by Foxes have been identified as key threatening processes⁵ in Australia. Koalas are also known to occur throughout the Kuitpo area. There is no conclusive evidence to suggest that koalas are indigenous to the Mount Lofty Ranges region.

3.4.5 Introduced Disease

Phytophthora cinnamomi

Many pathogens are known to cause root-rot disease in Australian flora species, but the introduced *Phytophthora cinnamomi* has had the greatest effect and poses the greatest threat (Environment Australia 2001).

P. cinnamomi (Pc) is a soil-borne microscopic water mould. It grows in a thread-like fashion through the roots and trunks of infected plants. The only outward sign of its presence is sickness, or death, of the infected plant. Infestation is permanent – spores are long-lived and can remain dormant in cool, dry soils, until conditions are right for fungal growth. It is dispersed by water and other vectors, such as native animals, vehicles and bushwalkers. Yaccas and banksias are particularly sensitive and have been regarded as indicator species. Pc has been identified as one of Australia's key threatening processes: it is considered a major threat to the nation's native vegetation and associated fauna.

In 1977, Pc was confirmed in Knott Hill NFR in compartment KH2 and in the adjacent pine plantations. The infestation was associated with a sawdust heap, established in the area in the early 1960s. The origin of this heap is not known, but may have been the waste dumped from the sawmill opposite the Kuitpo Forest Information Centre on Peters Creek Road.

In 1996, significant dieback of numerous *Xanthorrhoea* spp. was noted in creek lines during a survey of the occurrence and distribution of introduced plants in Mount Panorama NFR. In 2001, approximately one hectare of dead yaccas was detected adjacent a horse riding trail being used in the northern area of Mount Panorama NFR, in compartment MP1. Soil samples were taken and subsequently analysed. The pathogen was not confirmed, but this does not necessarily rule out the presence of the disease. In 2005 numerous dead *Banksia marginata* were observed in the northern area adjacent to the track dividing compartments MP1 and MP2

⁵ A process which threatens or may threaten the survival, abundance or evolutionary development of a native species or ecological community (www.environment.gov.au/epbc).

Investigation and soil testing confirmed the presence of Pc in the northern section of Christmas Hill NFR in 1980. Following the Ash Wednesday wildfire in 1983, a large amount of vehicle activity occurred whilst harvesting burnt plantation trees in this part of the Kuitpo Forest Reserve. Following the re-establishment of some of the wetter areas, Pc symptoms were noticed in some young plantations. Another suspected Pc infestation was noted in 2005 along Blackfellows Creek Road (DEH 2005).

The whole of the Mount Lofty Ranges is deemed to be a High Risk Area, where Pc is known to be present, or is likely to become established (Phytophthora Technical Group 2003). Within the region there are Risk Management Zones that have been designated by DEH. The NFRs in Kuitpo fall within a Moderate Risk Management Zones, apart from the areas surrounding the suspected and known Pc sites, which are classed as High Risk Zones. The adoption of management strategies appropriate to the zone, and any activities in that zone, can minimise the spread of Pc. These strategies, as outlined in the “Phytophthora Management Guidelines” (2003), must be incorporated into the planning of high-risk activities.

More information can be obtained from the publication, *Phytophthora Management Guidelines* (2003), available from DEH or online at, www.environment.sa.gov.au/biodiversity/pdfs/phytophthora.pdf.

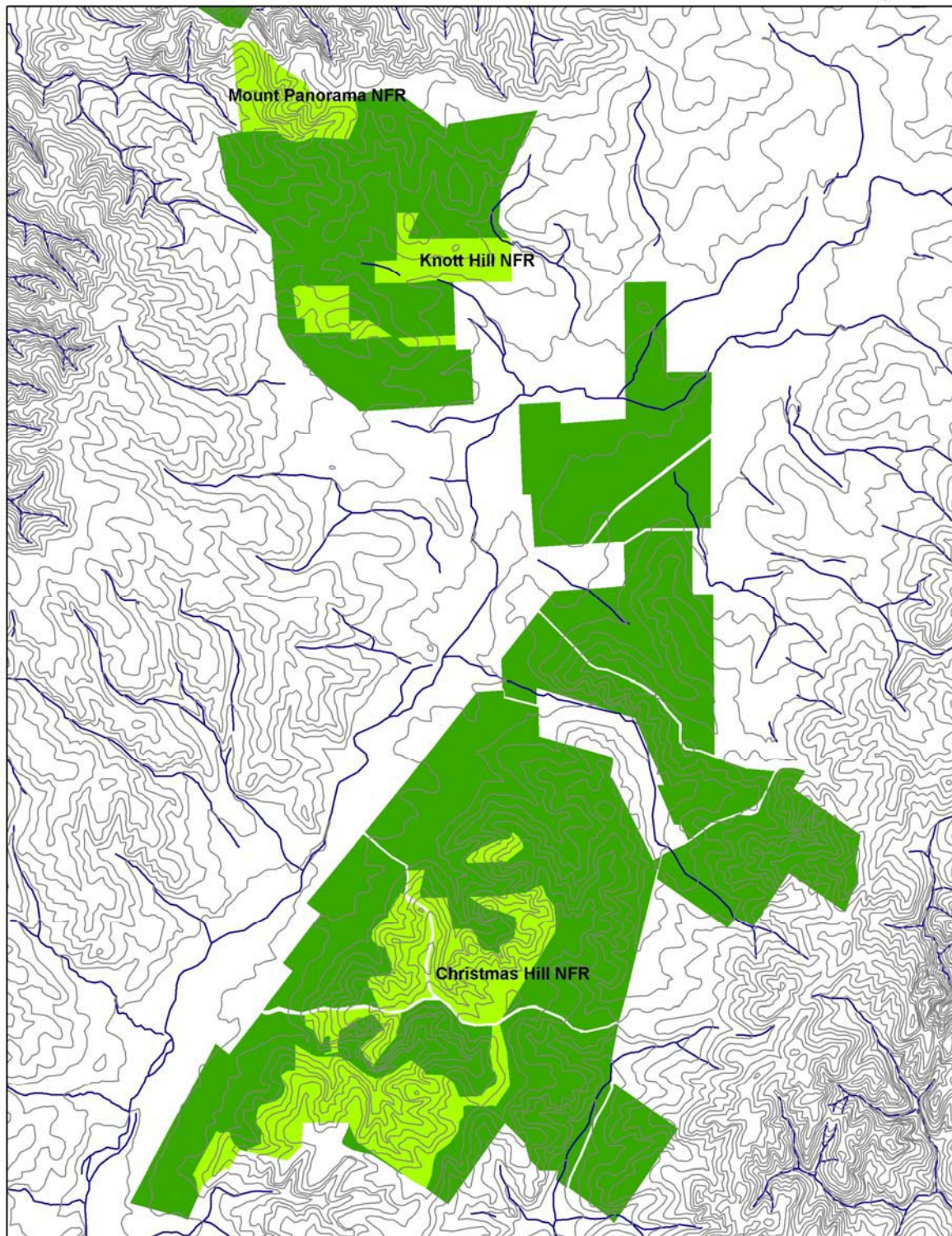
Mundulla Yellows



Mundulla Yellows, first identified thirty years ago, is a disease affecting native vegetation around southern Australia. The disease results in mortality in a wide range of native species and poses a potentially significant threat to remnant vegetation and rural revegetation. The exact cause of the disease is still unknown, but it is now considered to be a result of complex interactions of soil properties, nutrients, soil compaction, water availability, increased alkalinity and salinity and bicarbonate in the soil solution (Phillips 2005). Mundulla Yellows has been reported in trees of all ages and once symptoms appear the tree dies within a few years.

In South Australia the disease appears most prolific in the south-east. However, trees at several localities throughout the Adelaide metropolitan area and Southern Mount Lofty Ranges have been recorded expressing Mundulla Yellows-like symptoms. Although it has not been detected within the reserves, confirmed outbreaks of Mundulla Yellows have been recorded in the Barossa Valley region, north of Kuitpo.

Recent research has resulted in the reversal of Mundulla symptoms in seedlings by applying a dilute chelated iron solution. Pilot field trials with mature trees sprayed with iron and manganese were also successful (Phillips 2005). Until more specific knowledge is available, general plant hygiene practices, such as disinfecting pruning tools, may help to minimise the risk, through human activity, of spreading the disease from plant to plant and, most importantly, into new areas.

Figure 4



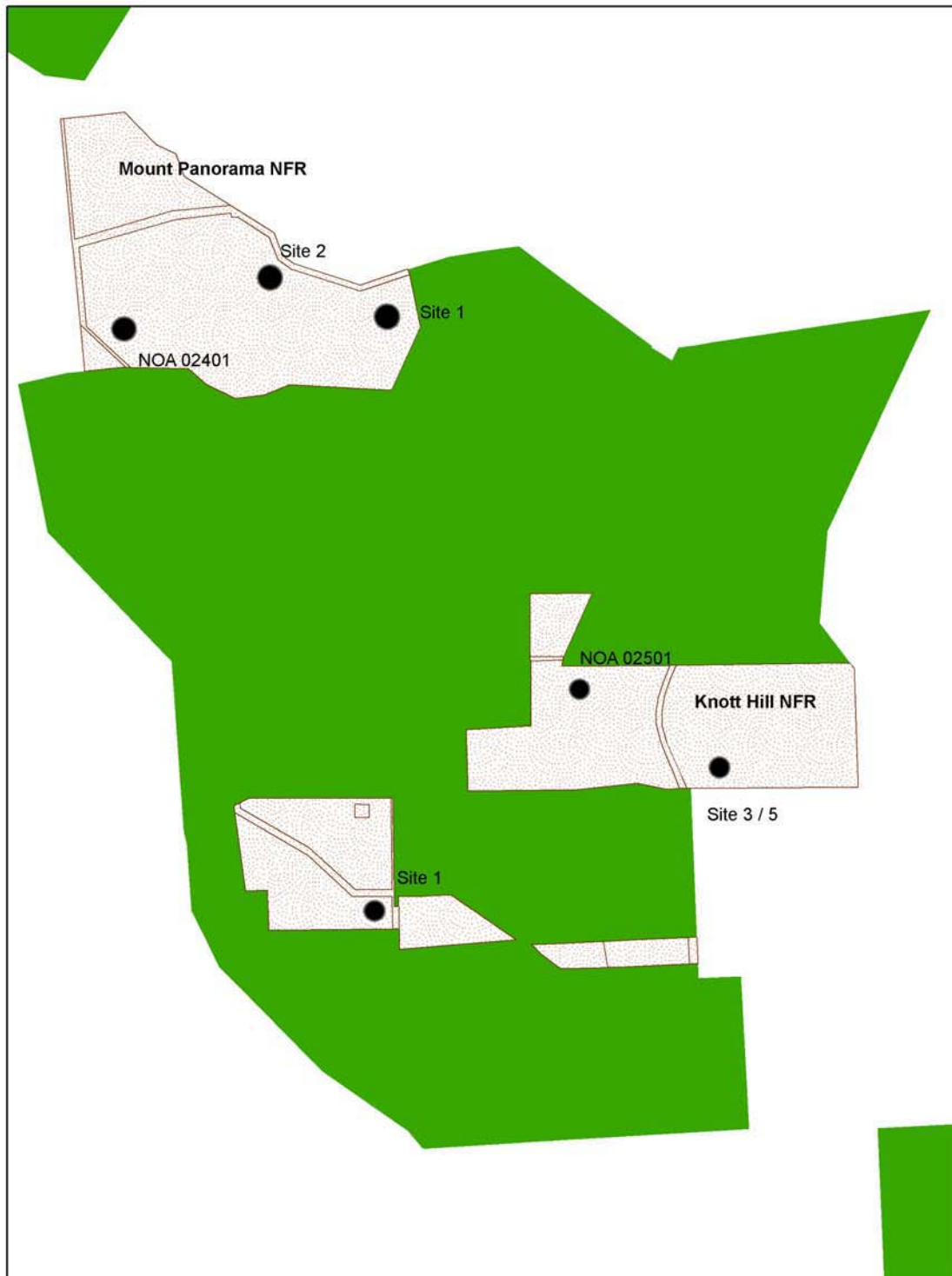
-  General Forestry
-  Native Forest Reserve

Kuitpo Native Forest Reserves

Drainage & Topography

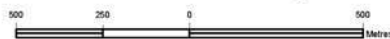


Figure 5



- General Forestry
- Native Forest Reserve

Kuitpo Native Forest Reserves
Mount Panorama & Knott Hill
Research & Monitoring Sites



4. LAND USE

4.1 History

4.1.1 Acquisition and Name

Knott Hill NFR takes its name from the area dedicated to Dr John Knott, an early settler in the Kangarilla District. He is credited with pioneering the road over Mount Panorama to "the Meadows". This road extends along the northern boundary of Mount Panorama NFR and is now known as Old Coach Road, reflecting its earlier use.

Mount Panorama NFR was named for its proximity to nearby Mount Panorama, the most elevated local feature at 350 m above sea level.

The name Christmas Hill is derived from the peak of the same name on the north-eastern boundary of the reserve.

Land tenure prior to acquisition by ForestrySA is included in Appendix 5.

4.1.2 Hardwood Timber Cutting

Extracts from "*Kangarilla Historical Records*" (1956) and the Woods and Forests Department Annual Reports from the late 1890s, indicate that Kuitpo Forest was one of the first areas to be cleared and planted with plantation timber. In 1897 the Kuitpo Forest area was covered by dense Stringybark woodland. However, in 1898 the Woods and Forests Department sent William Durward to the area to commence clearing. The first plantings were undertaken in 1898, when 18 acres of *E. sideroxylon* ssp. *sideroxylon* (Red ironbark) were established adjacent to Old Coach Road. These plantings were heritage listed in 1998.

Timber was originally cut using pitsaws, although the first steam driven mill was established in 1895. Mills were portable and drawn around by horse to the timber supply, rather than hauling wood to the mill. The hauling of logs was usually undertaken over short distances, possibly by horse or bullock-drawn "timber jinkers". The early products from timber cutting of eucalypt were predominantly railway sleepers, floor bearers and joists from Red gum. Building timber, roofing shingles, post and rails for fences, were cut from stringybark, the most abundant species.

Most of the land between Knott Hill and Mount Panorama NFRs was cleared and planted with pines (*Pinus radiata*) by 1921. At this time, the clearing process first involved manually cutting larger trees of commercial value, then the remaining trees to create space in which to plant pine. Areas were occasionally burnt to remove understorey vegetation. Christmas Hill NFR is in an area originally known as the 'Tinjella Tract', and was extensively harvested for hardwood timber. Large eucalypts were selectively cut in the early 1900s and taken by bullock wagon to Willunga, then to Adelaide by rail. Smaller trees were also cut for local use as timber, fence posts, fence rails and domestic firewood.

After *Pinus radiata* was established in Christmas Hill in the late 1920s, logs from the remaining larger felled eucalypts were subsequently removed by horse and sled. A timber mill was known to have been established opposite the reserve on Brookman Road between 1920 and 1940, reflecting the intensity of timber cutting from this area of Kuitpo Forest. Much of the natural eucalypt regeneration among the early plantations was also selectively, and repeatedly, cut as fuel for brick kilns. This cutting resulted in much of the regeneration on the slopes being multi-stemmed coppice form, rather than single stemmed.

The size of many original native trees is evident from historical photographs taken at Knott Hill by Walter Gill in 1904. The eucalypts that are present today are predominantly multi-stemmed coppice regeneration, usually less than 40 cms in diameter and generally less than 10 m high. It is clear from such photographs that the earliest trees to establish in the reserves had broad spreading structures, occupying considerable space. The wide spacing of the original trees supports the general descriptions from early settlers of easy movement through the forests. Shading and competition for moisture and nutrients from these large trees would have reduced the density of the understorey, hence facilitating travel. The high density of stems apparent today would increase shading and competition for both moisture and nutrients, thereby influencing the composition and structure of the understorey.

In Christmas Hill, compartment CH17 appears to have never been completely cleared of large trees or repeatedly cut, as extensive coppice regeneration is not evident. Most of the remaining original trees are single stemmed and larger than 60 cms in diameter. Due to their size and age, many of these trees contain hollows. This compartment is very similar to parts of Kyeema Conservation Park. These areas are likely to be representative of the early appearance of the whole region prior to extensive clearing in the 1940s. However, the recent repeated wildfires (1983, 1994 and 2001) in Kyeema Conservation Park have now destroyed many of the original large, old trees and logs on the ground (B. Gepp pers. obs.).

The native forest areas at Kuitpo were extensively cut-over for wood up until the mid 1970s, when fuel sources began changing to electricity and oil.

4.1.3 Softwood Afforestation

Excluding compartment CH17 in Christmas Hill, most of the area of Kuitpo Forest was planted with *Pinus radiata* between 1927 and 1934. Unlike many other areas that were afforested, the Christmas Hill area was not burnt to open up the understorey for planting. Pine seedlings were planted wherever openings occurred in the native vegetation.

Pine seedlings were individually fertilised with superphosphate at varying intervals after planting. Most of the fertiliser was applied to trees in the gullies and lower slopes. The shallow lateritic (ironstone) soils on the ridges, and the absence of fertiliser allowed the native vegetation to dominate the ridge sites. Additionally, laterite binds phosphate so that it becomes less available to the pines. At the time of Ash

Wednesday, large pines up to 80 cms in diameter and 30-35 m high occurred in the gullies and lower slopes. The ridges were predominantly dense native vegetation with sparsely scattered pines usually less than 30 cms diameter. At this time, the gullies were the only areas regarded as economically viable plantations.

In Knott Hill NFR, compartment KH1 was originally planted with *Pinus laricio* (Corsican pine) in 1914, but now also contains a variety of understorey species. As the area occurs on a lateritic ridge and has not been fertilised (as records indicate), the original plantations did not grow to dominate the site. Consequently, the native understorey developed in the absence of a dense shaded cover from the pine plantation. This compartment, zoned Transition, was reserved for inclusion into the NFR in 1999 due to the diversity of species present.

Compartment KH4 in Knott Hill contains a small 0.2 ha, experimental plot of densely planted *Pinus pinea* (Stone pine) established in 1916. These trees have no commercial value (R. Smith pers. comm.) and will be removed from the reserve, and the area rehabilitated. A rubbish dump was established in this compartment in the 1970s, but its use was terminated in the late 1980s. Some experimental plantings of introduced eucalypts also occurred in this compartment. Their poor growth is a consequence of both poor soil type and lack of fertiliser. Compartments KH5 and KH6 were cleared and planted with pines in 1915 and 1916. Due to the poor soil and elevated position they never produced trees of any significant quality or quantity, and hence were never replanted as second rotation sites. Consequently, these compartments continued to regenerate with native species. In 1998, the remaining pines were felled in these compartments. Compartments KH2 and KH3 were not cleared of native vegetation as they were regarded to be generally unfavourable for establishment with pines. In 2001 a water-monitoring flume was established in the south-eastern corner of compartment KH3 to monitor run-off from plantations.

Following Ash Wednesday in 1983, areas that were previously pine plantation were fertilised and seeded from the air with a mixture of clovers to help minimise erosion.

4.1.4 Fire

Ash Wednesday (16 February 1983) is the only extensive wildfire known to have occurred throughout the Kuitpo Forest area since the 1950s. It destroyed the southern and central section of the forest reserve, including Kyeema Conservation Park adjacent to Christmas Hill NFR, but was contained before reaching Knott Hill and Mt. Panorama in the north. However, wildfire did occur in these areas in 1936 and 1955, but the exact boundaries of the fires are unclear. It is likely that the NFR areas were not extensively affected by these fires as compartment KH1 in Knott Hill NFR containing *Pinus laricio* planted in 1914, appears not to have been affected.

The native vegetation that has perpetuated within this compartment provides a unique example of vegetation composition with a long absence of fire. However, fire scars on stumps in both the Mount Panorama and Knott Hill NFRs would suggest that no areas have remained totally unburnt. Comments on vegetation maps produced by the Woods

and Forest Department in 1916, indicate areas as "burnt", suggesting that fires have been a continual process in these landscapes.

The Ash Wednesday wildfire, and the further wildfires in Kyeema Conservation Park in 1994 and 2001, have greatly impacted upon the structure of overstorey vegetation within Christmas Hill NFR and the surrounding area. Trees that originally contained hollows were destroyed and subsequently collapsed, further reducing their abundance. Repeated high intensity fires have a significant impact upon the growth of multi-stemmed coppice regeneration. As many of the trees in the reserve are regrowth approximately 40-60 years old, their height is generally less than 5-6 m. A fire that burns the canopy causes the trees to re-sprout from the base. As most of Christmas Hill NFR is multi-stemmed coppice regeneration, fire prescriptions need to take this into consideration. Any additional high intensity fire impact on these regenerating trees will severely affect their growth, and any future supply of nesting and breeding hollows for fauna.

Compartment CH17 in Christmas Hill NFR was prescribed burnt in 1969 and again in 1981 to investigate the effects of prescribed burning on flora and fauna. This burning appeared to have little impact on reducing the intensity of the 1983 wildfire. This compartment was again prescribed burnt in 1989. Prescribed burning has also been used as a management tool to control wild pine seedlings before they produce and disperse seed.

Knott Hill compartment KH3 was prescribed burnt in 1980, and Mount Panorama compartment MP2 in 1990. A 20 m fuel modified zone is also located on the northern boundary of compartment MP1 of Mount Panorama NFR. Fuel modified zones are specifically designated to maintain low levels of fuel so that wildfire intensity is reduced. Dependent upon vegetation growth, prescribed burning of these areas may be undertaken more frequently in these zones.

ForestrySA will use prescribed burning in designated reserves as an effective management technique for reducing the amount of flammable material to assist in fire prevention for both natural and other assets. Prescribed burning conducted by ForestrySA for habitat management is undertaken at varying intervals, seasons and intensities in order to provide sufficient heat and chemical stimulation to initiate both the release and germination of seeds; to create a mosaic of gaps in the vegetation to provide the best opportunity for seeds to germinate and grow; and to create a series of successional stages of plant growth as fauna habitats (ForestrySA Corporate Policy, PCP0040).

In order to develop burning prescriptions which maximise (and maintain) biodiversity within the reserve, it is proposed that a review of the disturbance history and life history of fauna and plant communities be collected to identify areas which need to be either protected from, or exposed to fire regimes. The life histories of individual species can be assessed according to their "Vital Attributes"⁶, described by Noble and Slatyer (1981), enabling identification of "Key Fire Response Species"⁷ (Tolhurst and Friend

⁶ Describes the response of a plant population to a particular disturbance (Tolhurst and Friend 2001).

⁷ Those species most likely to be adversely affected by either too frequent, or too infrequent fire (Tolhurst and Friend 2001).

2001). Life history attributes, in conjunction with fire history information and spatial distribution of plant communities in the landscape, can be used to define the frequency, season and intensity of fire needed to maintain all species in an identifiable vegetation community (Tolhurst and Friend 2001). As the detail of this information is not available for inclusion in this management plan an additional prescribed burning management plan will be developed for review and approval by the Native Vegetation Council before any future prescribed burns occur.

4.1.5 Agriculture

It is likely that the first activities by early settlers comprised small-scale farming and extensive grazing throughout the management areas. There are currently no grazing leases in place for any of the NFRs.

According to “*Kangarilla Historical Records*” (1956), in the early days of settlement, wheat and oats were grown in the area. The first records, published in 1844, show that large areas of the district were under cultivation. After being cut, loose hay was raked into heaps, and after seven or eight days when it was dry enough, the grain was thrashed out, swept into heaps and cleaned by sieving. After cleaning, the grain was taken to McLaren Vale for grinding, being the nearest mill available.

4.2 Current Uses

4.2.1 Conservation

With increasing awareness of conservation values in the late 1960s and early 1970s, the former Woods and Forests Department specifically reserved areas for this purpose.

Compartments KH1 and KH4 of Knott Hill NFR are designated Scientific Benchmark Areas. Scientific Benchmark Areas are selected as representative areas of least disturbance (from activities such as fire and vegetation clearance), enabling reference to other areas within the reserve. Scientific Benchmark Areas are excluded from prescribed burning activities.

In Christmas Hill NFR the most southerly compartment, CH17, has been managed and protected for its environmental value since the 1960s, having never been established with *Pinus radiata*. As a consequence of the removal of pine regeneration by prescribed burning from areas originally softwood plantation, compartments CH1, CH3, CH6 and CH17 have now been designated as Scientific Benchmark Areas under the following criteria:

- CH1 contains trees that have the greatest potential to develop hollows in the shortest time, comprising large diameter, single stemmed trees;
- CH3 and CH6 contain a large area of *Eucalyptus baxteri* and *E. cosmophylla* that is almost entirely free from pine regeneration from original plantings; and

- CH17 contains mature trees with hollows.

4.2.2 Community Use

The Heysen Trail is a long-distance walking trail traversing the Mount Lofty Ranges. The trail passes adjacent to the southern boundary of Mount Panorama NFR, heading east to the Ironbarks picnic ground, or south to pass between compartments KH4 and KH5 of Knott Hill NFR. The trail then leads south and passes adjacent to the eastern boundary of Christmas Hill NFR and through Kyeema Conservation Park.

The Onkeeta Trail links with the Heysen Trail and traverses up to 10 kms through both pine plantation and areas of native forest. The Onkeeta Trail starts from the Onkeeta picnic area, located on Peter Creek Road, approximately 3 kms north-west of the Kuitpo Forest Information Centre. Another local trail, the Tinjella Trail, loops through pine plantation beginning on Christmas Hill Road, south of the Kuitpo Forest Information Centre.

ForestrySA permits orienteering and rogaining events in suitable locations, as part of the broader community-use management strategy for the NFRs. Orienteering and rogaining are regulated in accordance with ForestrySA's Corporate Policy (PCF0006) to ensure there is no adverse impact on the sustainable management of the reserve. Particularly sensitive areas, including sites with threatened flora and fauna species, significant plant associations and areas posing high risk of damage due to terrain or condition must be avoided during events. The intensity and frequency of organised events throughout a year will also determine management decisions.

Camping is not permitted in the NFRs, but is available at the nearby Chookarloo campground. Jacks Paddock and Rocky Creek Hut camping grounds are also available to large camp groups, such as Scouts and school groups involved in outdoor education programs. In these locations wood fires are not permitted from 1 November to 30 April, however, gas fires are permitted from 1 April to 30 November each year.

ForestrySA encourages volunteers and volunteer groups to become involved in activities that meet the aims and objectives of improving the reserves conservation use values. Groups have been involved in weed control, particularly control of wild pine, nestbox monitoring and flora and fauna surveys.

Horse riding is not permitted in NFRs. Permits are required for camping and horse riding in other forest areas, and are available from the Kuitpo Forest Information Centre.

ForestrySA acknowledges that appropriate management strategies must be incorporated into the planning of activities, which pose a threat to the biological diversity of the reserve.

4.3 Adjacent Land Use

The western and northern boundaries of Mount Panorama NFR adjoin privately owned land, including a Heritage Agreement area. To the east and south are commercial pine plantations managed by ForestrySA.

Knott Hill NFR is has commercial pine plantations to the north, south and west, and privately owned land adjoins the reserve to the east.

Christmas Hill NFR is surrounded by commercial pine plantations managed by ForestrySA, on the north, west and eastern boundaries. Kyeema Conservation Park borders the reserve to the south.

An area of Old Coach Road adjacent Mount Panorama NFR to the north, has been classified as Category A (native vegetation in almost weed-free condition) roadside reserve by the City of Onkaparinga (Robertson 1996). This roadside reserve provides a link between the reserve, and a Heritage Agreement area adjacent compartment MP2. It also has the potential to be enhanced in some areas and provide a link between Mount Panorama NFR and other native vegetation managed by ForestrySA.

5. MANAGEMENT PROGRAM

The Community Forestry Section of ForestrySA has the management responsibility for implementing the program. The Management actions proposed will be carried out in accordance with guidelines contained in the relevant procedural policies. In determining priority for management of the reserve's natural or physical resources, it is considered that:

- 1 = High priority; threat has a high capacity to degrade the resource.
- 2 = Medium priority.
- 3 = Low priority; threat has a low capacity to degrade the resource.

OBJECTIVE: Conservation Management		Priority for Action	Timing
Goals	Performance Indicator(s)/Action(s)		
Manage the reserves for the conservation of biodiversity.	No loss of species identified within survey results.	1	10yr review
Undertake biological surveys of the reserves to build on knowledge base.	Periodic surveys undertaken to identify and monitor species diversity. Data available from DEH databases.	1	Ongoing
Commence monitoring of bandicoots in Christmas Hill		1	Start 2006
Identify and describe plant species within the reserves	Plant species are described in herbarium - digital or collected specimens.	2	Start 2006-ongoing
Maintain link with DEH corporate databases.	Survey data is available to ForestrySA and other agencies/groups/individuals.	1	Ongoing
Undertake bat monitoring in the reserves	Periodic bat recording undertaken and results fed back to SA Museum	2	Start Spring 2005-ongoing
Continue monitoring the nestboxes in Christmas Hill	Nestboxes assessed every 2-3 years. Management adjusted to reflect results.	2	Ongoing

OBJECTIVE: Community Use		Priority for Action	Timing
Goals	Performance Indicator(s)/Action(s)		
Communicate potential threat and status of disease within the reserves' to relevant community groups, and the wider community.	Provision of educational material, and signs at reserves.	1	Ongoing
Provide visitors with appropriate information regarding the reserves values.	Educational material available at Kuitpo Forest Information Centre or on internet. Signs erected at appropriate locations.	2	Ongoing
Maintain walking trails to acceptable specified standards.	Trails free from erosion, well marked and accessible. Trails re-located if required.	2	Ongoing

OBJECTIVE: Protection		Priority for Action	Timing
Goals	Performance Indicator(s)/Action(s)		
Identify, protect and enhance areas of cultural, historical and scientific interest.	Management Plan is developed and implemented and new information is readily available for inclusion into the plan before review date	When required	Ongoing
Communicate the latest relevant information in relation to hygiene management (pathogen and weed seed spread) to ForestrySA staff and contractors.	Staff and contractors have access to the latest information from the Kuitpo Information Centre.	1	Start 2006-ongoing
Implement management actions to reduce the spread of <i>Phytophthora</i> , other plant pathogens and weed seeds within the reserves.	Area affected by <i>Phytophthora</i> does not increase. No new pathogens or weed species introduced.	1	Start 2006-annual review
Develop ecologically-based fire regimes to maximise biodiversity.	Vital attributes for plant (and animal) species within the reserve are completed. Key fire response species for the reserve are identified. Key fire response species are monitored.	1	Start 2006
Minimise the impact of wildfire using a range of fire protection measures available to ForestrySA.	Annual programs are completed. Firebreaks are maintained. Public access and use is restricted in periods of high fire danger	1	Ongoing
Identify activities with the potential for deleterious environmental impacts and facilitate monitoring programs, including activities resulting from forest operations in adjacent areas.	Impacts of permitted activities are monitored and reported by recreation user(s) or ForestrySA	1	Ongoing
	Establish exclusion zone on ForestrySA GIS for edge of fire track located on southern side of Cpt KH7 to protect <i>Paracaleana minor</i> . Install Significant Site Marker Posts at above location, update database and disseminate information relating to protect actions.	1	2006
	Reinforce the management requirements to staff and contractors relating to existing (and any new) Significant Site Marker Posts located at southern side of track adjacent Cpt KH5 protecting <i>Caleana major</i> . Slashing of native vegetation in the above area to occur in early Autumn once orchids have seeded. Slashing to be managed by Community Forestry staff at Kuitpo.	1	2006
Reduce the impacts resulting from fragmentation and/or edge effects between and adjacent to sections of NFR.	Possible options identified with Forest Resources for rehabilitation of adjoining areas. Where possible adjoining landholders engaged in conservation works (through existing community natural resource management programs)	2	Start 2006

OBJECTIVE: Protection		Priority for Action	Timing
Goals	Performance Indicator(s)/Action(s)		
Minimise the impact of introduced plants and/or animals on the conservation values of the reserves.	A reduction in the distribution and number of introduced plant and animal species in the reserve. Annual weed control program in place.	2	Ongoing
	Continue implementation of wild pine control programs within the reserves	1	Ongoing
	Remove <i>Pinus pinea</i> and <i>Pinus larricio</i> plantings in Knott Hill	2	2006+
Re-locate internal access tracks (where required) to facilitate fire protection works.	Number and position of access tracks relative to previous years.	2	If required
Maintain vehicle access tracks in a condition suitable for fire appliances	Access to facilitate fire protection is available.	2	Ongoing
Erect compartment signs to assist navigation within the reserves.	Signs erected at compartment intersection(s).	3	2006

OBJECTIVE: Rehabilitation		Priority for Action	Timing
Goals	Performance Indicator(s)/Action(s)		
Rehabilitate and/or revegetate degraded areas within the reserves.	Number of hectares rehabilitated relative to the previous years.	2	Ongoing
	Control Ash trees located in drainage line in south-west corner of Cpt MP2 and manage for regeneration of native species.	1	2006+
	Control of priority weeds including Blackberry, Gorse, Dog rose, Watsonia identified from weed surveys	1	2006+
Rehabilitate tracks and/or firebreaks no longer required for access.	Number of tracks and/or firebreaks relative to previous years.	3	As required
	Close lower end of disused track on western side in northern section of Cpt MP2 (top section has gate, middle section is mounded restricting vehicular access)	1	2006
	Monitor track above for erosion/regeneration. Adjust management if required.	3	Ongoing

OBJECTIVE: Stakeholder Involvement		Priority for Action	Timing
Goals	Performance Indicator(s)/Action(s)		
Maintain links with other natural resource and environmental agencies, and community groups – their programs, activities and/or projects.	Established and/or maintained links with other agencies and groups.	2	As required.
Maintain communication with adjacent landholders and pursue opportunities for co-operative management.	Number of complaints received regarding management.	As required	Ongoing
Encourage involvement by volunteers and community groups in the control of pest plants and animals, and rehabilitation and monitoring of sites within the reserves.	Participation of volunteers and community groups.	1	Ongoing

NOTE: Recent changes in nomenclature and taxonomy of plants have not been included. To view changes visit http://www.flora.sa.gov.au/pdfs/Census_5.0_web.pdf.

APPENDIX 1 PLANT SPECIES RECORDED FOR MOUNT PANORAMA, KNOTT HILL AND CHRISTMAS HILL NFRs

Mount Panorama – MP; KH - Knott Hill; Christmas Hill - CH

* = introduced species

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Acacia melanoxylon</i>	Blackwood	•	•	•			
<i>Acacia myrtifolia</i> var. <i>myrtifolia</i>	Myrtle wattle	•	•	•			
<i>Acacia paradoxa</i>	Kangaroo thorn	•	•	•			
<i>Acacia pycnantha</i>	Golden wattle	•	•	•			
<i>Acacia retinodes</i> var. <i>retinodes</i> (swamp form)	Swamp wattle	•	•	•			
<i>Acacia spinescens</i>	Spiny wattle	•	•				
<i>Acacia verticillata</i>	Prickly Moses	•	•	•			
<i>Acaena echinata</i> var. <i>echinata</i>	Sheep's burr	•	•	•			
<i>Acaena novae-zelandiae</i>	Biddy-biddy	•	•	•			
* <i>Acetosella vulgaris</i>	Sorrel			•			
<i>Acianthus caudatus</i> var.	Mayfly orchid	•	•	•			
<i>Acianthus pusillus</i>	Mosquito orchid	•	•	•			
<i>Acrotriche serrulata</i>	Ground cushion berry	•	•	•			
<i>Adenanthos terminalis</i>	Yellow gland-flower	•	•				U
<i>Adiantum aethiopicum</i>	Common maiden-hair			•			
<i>Agrostis aemula</i>	Blown-grass	•	•				
<i>Agrostis avenacea</i> var. <i>avenacea</i>	Common blown-grass		•				
* <i>Aira cupaniana</i>	Small hair-grass	•					
<i>Allocasuarina muelleriana</i> ssp. <i>muelleriana</i>	Common oak-bush	•	•	•			
<i>Allocasuarina striata</i>	Stalked oak-bush	•	•	•			
<i>Allocasuarina verticillata</i>	Drooping sheoak	•	•				
<i>Amphibromus archeri</i>	Pointed swamp wallaby-grass		•			R	R
<i>Amphibromus nervosus</i>	Veined swamp wallaby-grass		•				Q
<i>Amphipogon strictus</i> var. <i>setifer</i>	Spreading grey-beard grass	•					
<i>Amyema miquelli</i>	Box mistletoe	•					
<i>Amyema pendulum</i> ssp. <i>pendulum</i>	Drooping mistletoe	•					U
<i>Amyema preissii</i>	Wire-leaf mistletoe	•					
* <i>Anagallis arvensis</i>	Pimpernel	•	•				
* <i>Arctotheca calendula</i>	Cape weed	•		•			
<i>Aphelia gracilis</i>	Slender aphelia		•				R
<i>Aphelia pumilio</i>	Dwarf aphelia		•				
<i>Argentipallium blandowskianum</i>	Woolly everlasting	•	•				R

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Arthropodium strictum</i>	Common vanilla-lily		•	•			
* <i>Asparagus asparagoides</i>	Bridal creeper	•					
<i>Astroloma conostephioides</i>	Flame heath	•	•	•			
<i>Astroloma humifusum</i>	Cranberry heath	•	•	•			
<i>Baeckea ramosissima</i> ssp. <i>ramosissima</i>	Rosy baeckea	•	•	•			
<i>Banksia marginata</i>	Silver banksia	•	•	•			
<i>Banksia ornata</i>	Desert banksia	•	•				
<i>Baumea articulata</i>	Jointed twig-rush		•				R
<i>Baumea juncea</i>	Bare twig-rush	•	•				
<i>Baumea tetragona</i>	Square twig-rush		•				U
<i>Billardiera bignoniacea</i>	Orange bell-climber	•		•			U
<i>Billardiera cymosa</i>	Sweet apple-berry	•	•	•			
<i>Billardiera uniflora</i>	One-flower apple-berry		•				R
<i>Boronia coerulescens</i> ssp. <i>coerulescens</i>	Blue boronia	•	•				
<i>Bossiaea prostrata</i>	Creeping bossiaea	•	•				
* <i>Briza maxima</i>	Large quaking-grass	•	•	•			
* <i>Bromus diandrus</i>	Great brome	•					
<i>Brunonia australis</i>	Blue pincushion	•	•	•			
<i>Bulbine bulbosa</i>	Bulbine-lily	•	•	•			
<i>Burchardia umbellata</i>	Milkmaids	•	•	•			
<i>Bursaria spinosa</i>	Sweet bursaria			•			
<i>Caesia calliantha</i>	Blue grass-lily	•	•				
<i>Caladenia</i> sp.	Spider orchid	•					
<i>Caladenia carnea</i> var. <i>carnea</i>	Pink fingers		•				
<i>Caladenia leptochila</i>	Narrow-lip spider-orchid		•				
<i>Caladenia minor</i>	Pigmy caladenia		•			R	R
<i>Caladenia reticulata</i>	Veined spider-orchid		•				U
<i>Caladenia tentaculata</i>	King spider orchid	•	•	•			
<i>Caleana major</i>	Large duck-orchid		•			V	V
<i>Callistemon rugulosus</i> var. <i>rugulosus</i>	Scarlet bottlebrush		•				
<i>Calochilus robertsonii</i>	Purplish beard-orchid		•				
<i>Calytrix tetragona</i>	Common fringe-myrtle	•	•				
<i>Carex appressa</i>	Tall sedge		•				
<i>Carex tereticaulis</i>	Rush sedge		•	•			
<i>Cassytha glabella</i> forma <i>dispar</i>	Slender dodder-laurel	•	•	•			
<i>Cassytha pubescens</i>	Downy dodder-laurel	•	•	•			
* <i>Centaurium</i> sp.	Centuary	•		•			
<i>Centrolepis aristata</i>	Pointed centrolepis	•	•	•			
<i>Centrolepis strigosa</i>	Hairy centrolepis	•	•	•			
<i>Chamaescilla corymbosa</i> var. <i>corymbosa</i>	Blue squill	•	•	•			
<i>Cheilanthes austrotenuifolia</i>	Annual rock-fern	•	•	•			

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Chorizandra enodis</i>	Black bristle-rush		•				
<i>Chrysocephalum apiculatum</i>	Common everlasting			•			
<i>Chrysocephalum baxteri</i>	White everlasting	•	•				
* <i>Cirsium vulgare</i>	Spear thistle	•					
<i>Comesperma calymega</i>	Blue-spike milkwort		•				
<i>Conosperma calymega</i>	Blue-spike milkwort		•				
<i>Conospermum patens</i>	Slender smoke-bush		•				U
* <i>Conyza bonariensis</i>	Flax-leaf fleabane			•			
* <i>Coprosma repens</i>	New Zealand mirror-bush	•					
<i>Correa reflexa</i> var. <i>reflexa</i>	Common correa	•	•				
<i>Corybas dilatatus</i>	Common helmet-orchid	•	•				
<i>Corybas unguiculatus</i>	Small helmet-orchid		•			R	E
<i>Craspedia glauca</i>	Billy-buttons	•	•				
<i>Crassula closiana</i>	Stalked crassula		•				
<i>Crassula decumbens</i> var. <i>decumbens</i>	Spreading crassula		•	•			
<i>Cryptandra tomentosa</i>	Heath cryptandra	•	•				
<i>Cyanicula deformis</i>	Bluebeard orchid		•				
<i>Cyperus tenellus</i>	Tiny flat-sedge		•				
<i>Cyrtostylis reniformis</i>	Small gnat-orchid	•	•	•			
<i>Dampiera dysantha</i>	Shrubby dampiera		•				
<i>Danthonia caespitosa</i>	Common wallaby-grass		•				
<i>Danthonia geniculata</i>	Kneed wallaby-grass	•	•				
<i>Danthonia setacea</i> var. <i>setacea</i>	Small-flower wallaby-grass		•				
<i>Daviesia brevifolia</i>	Leafless bitter-pea	•	•	•			
<i>Daviesia leptophylla</i>	Narrow-leaf bitter-pea	•	•	•			
<i>Daviesia ulicifolia</i>	Gorse bitter-pea	•	•	•			
<i>Deyeuxia quadriseta</i>	Reed bent-grass	•	•				
<i>Dianella revolute</i> var. <i>revoluta</i>	Black-anther flax-lily	•		•			
<i>Dichondra repens</i>	Kidney weed	•	•	•			
<i>Dillwynia hispida</i>	Red parrot-pea	•	•	•			
<i>Dillwynia sericea</i>	Showy parrot-pea	•	•				
<i>Dipodium roseum</i>	Pink hyacinth orchid		•				
* <i>Disa bracteata</i>	South-African orchid	•		•			
* <i>Dittrichia graveolens</i>	Stinkweed	•		•			
<i>Diuris</i> aff. <i>corymbosa</i>	Wallflower donkey-orchid	•	•	•			
<i>Diuris brevifolia</i>	Short-leaf donkey-orchid	•	•			R	R
<i>Diuris pardina</i>	Spotted donkey-orchid	•	•				
<i>Drosera auriculata</i>	Tall sundew	•	•	•			
<i>Drosera glanduligera</i>	Scarlet sundew	•	•	•			
<i>Drosera macrantha</i> ssp. <i>planchonii</i>	Climbing sundew	•	•	•			
<i>Drosera peltata</i>	Pale sundew	•	•	•			
<i>Drosera pygmaea</i>	Tiny sundew		•	•			
<i>Drosera whittakeri</i> ssp. <i>whittakeri</i>	Sundew sp.	•	•	•			
* <i>Echium plantagineum</i>	Salvation Jane	•		•			

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Epacris impressa</i>	Common heath	•	•	•			
<i>Epilobium billardierianum</i> ssp. <i>billardierianum</i>	Robust willow-herb		•				
<i>Epilobium billardierianum</i> ssp. <i>cinereum</i>	Variable willow-herb		•				U
<i>Epilobium billardierianum</i> ssp. <i>intermedium</i>	Variable willow-herb		•				
* <i>Eragrostis benthamii</i>	Bentham's love-grass	•	•				
<i>Eriochilus cucullatus</i>	Parson's bands	•	•	•			
<i>Eucalyptus baxteri</i>	Brown stringybark	•	•				
<i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i>	River red gum	•	•	•			
<i>Eucalyptus cosmophylla</i>	Cup gum	•	•	•			
<i>Eucalyptus fasciculosa</i>	Pink gum	•	•	•			
<i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i>	SA blue gum	•	•	•			
<i>Eucalyptus obliqua</i>	Messmate stringybark	•	•	•			
<i>Eucalyptus ovata</i>	Swamp gum	•	•				
<i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i>	Rough-bark manna gum	•	•				
<i>Euchiton gymnocephalus</i>	Creeping cudweed	•		•			
<i>Exocarpos cupressiformis</i>	Native cherry	•	•	•			
* <i>Fraxinus rotundifolia</i> ssp. <i>rotundifolia</i>	Desert ash	•					
* <i>Freesia</i> sp.	Freesia	•					
* <i>Fumaria capreolata</i> ssp. <i>capreolata</i>	Whit-flower fumitory	•					
<i>Gahnia sieberiana</i>	Red-fruit cutting-grass	•	•				U
* <i>Galium murale</i>	Small bedstraw			•			
<i>Genoplesium rufum</i>	Red midge-orchid	•	•	•			
<i>Geranium retrorsum</i>	Grassland geranium	•	•				
<i>Geranium solanderi</i> var. <i>solanderi</i>	Austral geranium			•			
<i>Glossodia major</i>	Purple cockatoo	•	•	•			
<i>Gompholobium ecostatum</i>	Dwarf wedge-pea	•		•			
<i>Gonocarpus mezianus</i>	Broad-leaf raspwort	•	•				
<i>Gonocarpus tetragynus</i>	Small-leaf raspwort	•	•	•			
<i>Goodenia blackiana</i>	Native primrose	•	•	•			
<i>Goodenia geniculata</i>	Bent goodenia	•	•	•			
<i>Goodenia ovata</i>	Hop goodenia	•	•	•			
<i>Gratiola peruviana</i>	Austral brooklime		•				
<i>Grevillea lavandulacea</i> var. <i>lavandulacea</i>	Spider flower	•	•	•			
<i>Hakea carinata</i>	Erect hakea	•	•	•			
<i>Hakea rostrata</i>	Beaked hakea	•	•	•			
<i>Hakea rugosa</i>	Dwarf hakea	•	•	•			
<i>Haloragis heterophylla</i>	Variable raspwort	•	•				U
<i>Hardenbergia violacea</i>	Native lilac	•	•				
<i>Helichrysum scorpioides</i>	Button everlasting	•	•	•			

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Hibbertia exutiacies</i>	Prickly guinea-flower	•	•	•			
<i>Hibbertia incana</i>	Guinea-flower	•	•	•			
<i>Hibbertia riparia</i>	Guinea flower	•	•	•			
<i>Hibbertia virgata</i>	Twiggy guinea-flower	•	•				
* <i>Holcus lanatus</i>	Yorkshire fog	•		•			
<i>Hyalosperma demissum</i>	Dwarf sunray		•	•			
<i>Hydrocotyle callicarpa</i>	Tiny pennywort		•	•			
<i>Hydrocotyle foveolata</i>	Yellow pennywort		•				
<i>Hydrocotyle hirta</i>	Hairy pennywort		•	•			
<i>Hydrocotyle pterocarpa</i>	Wing pennywort		•				R
<i>Hypericum gramineum</i>	Small St John's wort	•	•	•			
* <i>Hypericum perforatum</i>	St. John's wort						
* <i>Hypochaeris radicata</i>	Rough cat's ear	•	•	•			
<i>Hypolaena fastigiata</i>	Tassel rope-rush	•	•				
<i>Hypoxis glabella</i> var. <i>glabella</i>	Tiny star	•		•			
<i>Hypoxis vaginata</i> var. <i>vaginata</i>	Yellow star		•				
<i>Isoetes drummondii</i> ssp.	Plain quillwort		•			R	R
<i>Isolepis fluitans</i>	Floating club-rush		•				U
<i>Isolepis inundata</i>	Swamp club-rush	•	•				
<i>Isolepis marginata</i>	Little club-rush			•			
<i>Isolepis nodosa</i>	Knobby club-rush	•	•				
<i>Isopogon ceratophyllus</i>	Horny cone-bush	•	•	•			
<i>Ixodia achillaeoides</i> ssp. <i>alata</i>	Hills daisy	•	•	•			
<i>Juncus articulatus</i>	Jointed rush	•					
<i>Juncus bufonius</i>	Toad rush		•				
* <i>Juncus capitatus</i>	Dwarf rush		•				
<i>Juncus holoschoenus</i>	Joint-leaf rush	•	•				
<i>Juncus pallidus</i>	Pale rush	•	•	•			
<i>Juncus pauciflorus</i>	Loose-flower rush		•				
<i>Juncus sarophorus</i>	Rush	•	•	•			
<i>Juncus subsecundus</i>	Finger rush	•	•				
<i>Kennedia prostrata</i>	Scarlet runner	•	•	•			
<i>Lagenifera gracilis</i>	Slender bottle-daisy	•	•			V	V
<i>Lagenifera huegelii</i>	Coarse bottle-daisy	•	•				
<i>Laxmannia orientalis</i>	Dwarf wire-lily	•	•	•			
<i>Lepidosperma carphoides</i>	Black rapier-sedge	•	•	•			
<i>Lepidosperma concavum</i>	Spreading sword-sedge		•				
<i>Lepidosperma curtisiae</i>	Little sword-sedge	•	•				
<i>Lepidosperma laterale</i> s.str.	Tall sword-sedge		•				U
<i>Lepidosperma semiteres</i>	Wire rapier-sedge	•	•	•			
<i>Lepidosperma viscidum</i>	Sticky sword-sedge	•					
<i>Leporella fimbriata</i>	Fringed hare-orchid		•				
<i>Leptocarpus tenax</i>	Slender twine-rush		•				U
<i>Leptoceras menziesii</i>	Hare orchid	•	•				

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Leptorhynchos squamatus</i>	Scaly buttons	•	•				
<i>Leptospermum continentale</i>	Prickly tea-tree	•	•	•			
<i>Leptospermum myrsinoides</i>	Heath tea-tree	•	•	•			
<i>Leucopogon hirsutus</i>	Hairy beard-heath		•			R	R
<i>Leucopogon lanceolatus</i>	Lance beard-heath	•	•				R
<i>Leucopogon virgatus</i>	Common beard-heath	•	•	•			
<i>Levenhookia pusilla</i>	Tiny stylewort		•	•			
<i>Lindsaea linearis</i>	Screw fern		•				U
<i>Lissanthe strigosa</i>	Peach heath			•			
<i>Lomandra densiflora</i>	Soft tussock mat-rush	•					
<i>Lomandra fibrata</i>	Mount Lofty mat-rush			•			
<i>Lomandra micrantha</i> ssp. <i>tuberculata</i>	Small-flower mat-rush	•	•	•			
<i>Lomandra multiflora</i> ssp. <i>dura</i>	Hard mat-rush	•	•	•			
<i>Lomandra nana</i>	Small mat-rush		•	•			
<i>Lysiana exocarpi</i> ssp. <i>exocarpi</i>	Harlequin mistletoe	•					
<i>Lythrum hyssopifolia</i>	Lesser loosestrife	•	•	•			
<i>Melaleuca decussata</i>	Totem-poles		•	•			
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping rice-grass	•	•	•			
<i>Microseris lanceolata</i>	Yam daisy	•					
<i>Microtis atrata</i>	Yellow onion-orchid		•			R	R
<i>Microtis orbicularis</i>	Swamp onion-orchid		•			R	E
<i>Microtis parviflora</i>	Slender onion-orchid	•	•				U
<i>Microtis rara</i>	Sweet onion-orchid		•			R	R
<i>Microtis unifolia</i> complex	Onion-orchid	•	•				
<i>Montia australasica</i>	White purslane		•			R	V
<i>Myriophyllum integrifolium</i>	Tiny milfoil		•			R	R
<i>Neurachne alopecuroidea</i>	Fox-tail mulga-grass	•	•	•			
* <i>Olea europaea</i>	Olive	•					
<i>Olearia ciliata</i> var. <i>ciliata</i>	Fringed daisy-bush	•	•				
<i>Olearia grandifolia</i>	Mount Lofty daisy-bush	•					U
<i>Olearia ramulosa</i>	Twiggy daisy-bush	•	•	•			
<i>Olearia tubuliflora</i>	Rayless daisy-bush	•	•				U
<i>Opercularia ovata</i>	Broad-leaf stinkweed	•	•				U
<i>Opercularia turpis</i>	Twiggy stinkweed		•				
<i>Opercularia varia</i>	Variable stinkweed	•	•	•			
<i>Orthoceras strictum</i>	Horned orchid		•				R
<i>Oxalis perennans</i>	Native sorrel	•	•	•			
* <i>Oxalis pes-caprae</i>	Soursob	•					
* <i>Paspalum dilatatum</i>	Paspalum	•					
<i>Paracaleana minor</i>	Small duck-orchid		•			V	E
<i>Patersonia occidentalis</i>	Long purple-flag	•	•				U
* <i>Pennisetum clandestinum</i>	Kikuyu	•					
* <i>Pentachistis pallida</i>	Pussy-tail	•		•			
* <i>Phalaris minor</i>	Lesser canary-grass	•					

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Phragmites australis</i>	Common reed	•					
<i>Phyllangium distylis</i>	Tiny mitrewort		•			R	K
<i>Pimelea humilis</i>	Low riceflower	•	•	•			
<i>Pimelea linifolia</i> ssp. <i>linifolia</i>	Slender riceflower	•	•	•			
<i>Pimelea octophylla</i>	Woolly riceflower		•	•			
<i>Pimelea phyllicoides</i>	Heath riceflower	•	•				
* <i>Pinus halepensis</i>	Aleppo pine	•					
* <i>Pinus laricio</i>	Coriscican pine		•				
* <i>Pinus pinea</i>	Stone pine		•				
* <i>Pinus radiata</i>	Radiata pine	•	•	•			
<i>Plantago gaudichaudii</i>	Narrow-leaf plantain		•				R
<i>Plantago hispida</i>	Hairy plantain		•				
* <i>Plantago lanceolata</i>	Ribwort	•		•			
<i>Platylobium obtusangulum</i>	Holly flat-pea	•	•	•			
* <i>Poa annua</i>	Winter grass			•			
<i>Poa clelandii</i>	Matted tussock-grass			•			
<i>Poa labillardieri</i> var. <i>labillardieri</i>	Common tussuck-grass		•				
<i>Poranthera microphylla</i>	Small poranthera	•					
<i>Prasophyllum australe</i>	Austral leek-orchid		•			R	R
<i>Prasophyllum elatum</i>	Tall leek-orchid			•			
<i>Prasophyllum odoratum</i>	Scented leek-orchid		•				
<i>Prunella vulgaris</i>	Self-heal		•				
<i>Pteridium esculentum</i>	Bracken fern	•	•	•			
<i>Pterostylis foliata</i>	Slender greenhood	•	•			R	R
<i>Pterostylis longifolia</i>	Tall greenhood	•	•				
<i>Pterostylis nana</i>	Dwarf greenhood	•	•	•			
<i>Pterostylis nutans</i>	Nodding greenhood	•	•				
<i>Pterostylis pedunculata</i>	Maroon-hood	•	•	•			
<i>Pterostylis plumosa</i>	Bearded greenhood		•				
<i>Pterostylis sanguinea</i>	Blood greenhood	•	•				
<i>Pultenaea acerosa</i>	Bristly bush-pea		•				U
<i>Pultenaea daphnoides</i>	Large-leaf bush pea	•	•	•			
<i>Pultenea largiflorens</i>	Twiggy bush-pea	•		•			
<i>Pultenaea pedunculata</i>	Matted bush-pea	•	•	•			
<i>Pultenea trinervis</i>	Three-nerve bush-pea			•			
<i>Pyrorchis nigricans</i>	Black fire-orchid	•	•	•			
<i>Ranunculus lappaceus</i>	Native buttercup	•					
<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>	Annual buttercup		•				
* <i>Raphanus raphanistrum</i>	Wild radish	•					
* <i>Romulea rosea</i> var. <i>australis</i>	Common onion-grass			•			
* <i>Rosa canina</i>	Dog rose	•	•				
* <i>Rubus fruticosus</i> agg.	Blackberry	•		•			
<i>Rutidosis multiflora</i>	Small wrinklewort		•	•			

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Scaevola albida</i> var. <i>albida</i>	Pale fanflower	•	•	•			
<i>Schoenus apogon</i>	Common bog-rush	•	•	•			
<i>Schoenus breviculmis</i>	Matted bog-rush	•	•				
<i>Schoenus laevigatus</i>			•			R	R
<i>Selaginella gracillima</i>	Tiny selaginella		•				R
<i>Senecio glomeratus</i>	Swamp groundsel	•	•	•			
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	Rough groundsel	•	•				U
<i>Senecio picridioides</i>	Purple-leaf groundsel	•	•				
* <i>Senecio pterophorus</i> var. <i>pterophorus</i>	South African daisy	•	•				
<i>Senecio quadridentatus</i>	Cotton groundsel		•	•			
<i>Senecio squarrosus</i>	Squarrose groundsel		•				R
<i>Senecio tenuiflorus</i>	Woodland groundsel	•	•	•			
* <i>Solanum nigrum</i>	Black nightshade		•				
<i>Solenogyne dominii</i>	Smooth solenogyne	•	•				U
<i>Sphaerolobium minus</i>	Leafless globe-pea		•			R	R
<i>Stackhousia aspericocca</i> ssp.	Bushy candles	•	•	•			
<i>Stackhousia monogyna</i>	Creamy candles		•				
<i>Stipa mollis</i>	Soft spear-grass		•				
<i>Stipa</i> sp.	Spear grass	•					
<i>Stylidium calcaratum</i>	Spurred trigger-plant		•				
<i>Stylidium graminifolium</i>	Grass trigger-plant	•	•	•			
<i>Stylidium inundatum</i>	Hundreds and thousands		•				
<i>Stylidium perpusillum</i>	Tiny trigger-plant		•				U
<i>Tetradlea pilosa</i> ssp. <i>pilosa</i>	Hairy pink-bells	•	•	•			
<i>Thelymitra antennifera</i>	Lemon sun-orchid	•	•	•			
<i>Thelymitra benthamiana</i>	Leopard sun-orchid	•	•				R
<i>Thelymitra flexuosa</i>	Twisted sun-orchid		•			R	R
<i>Thelymitra holmesii</i>	Blue star sun-orchid		•			V	V
<i>Thelymitra juncifolia</i>	Spotted sun-orchid		•				
<i>Thelymitra luteociliium</i>	Yellow-tuft sun-orchid	•					
<i>Thelymitra mucida</i>	Plum sun-orchid		•			R	R
<i>Thelymitra pauciflora</i>	Slender sun-orchid	•	•				
<i>Thelymitra rubra</i>	Salmon sun-orchid	•	•				
<i>Thelymitra</i> x <i>macmillanii</i>	Crimson sun-orchid		•				
<i>Themeda triandra</i>	Kangaroo grass	•	•	•			
<i>Thysanotus juncifolius</i>	Rush fringe-lily		•				
<i>Thysanotus patersonii</i>	Twining fringe-lily	•	•	•			
<i>Tricoryne elatior</i>	Yellow rush-lily	•	•				
* <i>Trifolium</i> sp.	Clover	•		•			
<i>Triglochin centrocarpum</i>	Dwarf arrowgrass		•				
<i>Triglochin procerum</i>	Water-ribbons		•				U
* <i>Ulex europeus</i>	Gorse	•	•	•			
<i>Utricularia tenella</i>	Pink bladderwort		•				R
* <i>Vellereophyton dealbatum</i>	White cudweed		•				

SCIENTIFIC NAME	COMMON NAME	LOCATION			STATUS		
		M P	K H	C H	AUS	SA	SL
<i>Villarsia umbricola</i> var. <i>umbricola</i>	Lax marsh-flower		•				U
<i>Viminaria juncea</i>	Native broom	•	•			R	R
<i>Viola cleistogamoides</i>	Shy violet	•	•	•			U
<i>Viola sieberiana</i>	Tiny violet	•	•				
<i>Wahlenbergia gracilentia</i>	Annual bluebell		•				
<i>Wahlenbergia luteola</i>	Yellow-wash bluebell	•		•			
<i>Wahlenbergia multicaulis</i>	Tadgell's bluebell		•				U
<i>Wahlenbergia stricta</i> ssp. <i>stricta</i>	Tall bluebell	•	•	•			
* <i>Watsonia bulbifera</i>	Watsonia	•					
<i>Wurmbea dioica</i> ssp. <i>dioica</i>	Early Nancy		•	•			
<i>Xanthorrhoea semiplana</i> ssp. <i>semiplana</i>	Yacca	•	•	•			
<i>Xanthosia pusilla</i>	Hairy xanthosia	•	•	•			
<i>Xanthosia tasmanica</i>	Southern xanthosia			•		R	R

Source for status of plant species in South Australia: *Environment Protection and Biodiversity Conservation Act 1999; National Parks and Wildlife Act 1972; Lang and Kraehenbuehl (1998).*

Source: DEH Biological Database of SA (Survey; Opportune; Reserves; Plant Population); ForestrySA.

APPENDIX 1a – FUNGI SPECIES RECORDED IN KUITPO FOREST RESERVE

Agaricus campestris
Agaricus vinaceus
Amanita muscaria
Amanita ochrophylla
Amanita xanthocephala
Boletus sp.
Calocera sinsesis
Coprinus comatus
Cortinarius archeri
Cortinarius australiensis
Cortinarius sanguineus
Cortinarius sp.
Crepidotus prostratus
Dermocybe austroveneta
Dermocybe austro-venetus
Gymnopilus pampeanus
Heterotextus flavus
Hypholoma fasciculare
Laccaria laccata
Laccaria proxima
Macrolepiota sp.
Myceana sp.
Omphalotus nidiformis
Pycnoporus cinnabarinus
Russula mariae
Schizophyllum commune
Stereum illudens
Suillus luteus
Tapinella panuoides
Trametes versicolor
Tremella fuciformis
Tricholoma coarctatum

Source: P. Catcheside, 1997.

APPENDIX 2 – FAUNA SPECIES RECORDED FOR MOUNT PANORAMA, KNOTT HILL AND CHRISTMAS HILL

Birds

H = hollow nesting species

* = introduced species

SCIENTIFIC NAME	COMMON NAME	STATUS		
		AUS	SA	REG
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped thornbill			
<i>Acanthiza lineata</i>	Striated thornbill			
<i>Acanthiza pusilla</i>	Brown thornbill			
<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill			
<i>Aegotheles cristatus</i>	Australian owl nightjar (H)			
<i>Anthochaera carunculata</i>	Red wattlebird			
<i>Anthochaera chrysoptera</i>	Little wattlebird			U
<i>Anthus novaeseelandiae</i>	Richard's pipit			
<i>Aquila audax</i>	Wedge-tailed eagle			
<i>Cacatua galerita</i>	Sulphur-crested cockatoo (H)			
<i>Cacatua roseicapilla</i>	Galah (H)			
<i>Calamanthus pyrrhopygius</i>	Chestnut-rumped heathwren		V	V
<i>Calyptorhynchus funereus</i>	Yellow-tailed black cockatoo (H)		V	V
<i>Chrysococcyx basalis</i>	Horsfield's bronze-cuckoo			
<i>Colluricincla harmonica</i>	Grey shrike-thrush			
<i>Coracina novaehollandiae</i>	Black-faced cuckoo-shrike			
<i>Corcorax melanorhamphos</i>	White-winged chough			V
<i>Cormobates leucophaeus</i>	White-throated treecreeper (H)			U
<i>Corvus mellori</i>	Little raven			
<i>Dacelo novaeguineae</i>	Laughing kookaburra (H)			
<i>Daphoenositta chrysoptera</i>	Varied sittella			
<i>Dicaeum hirundinaceum</i>	Mistletoebird			
<i>Elanus axillaris</i>	Black-shouldered kite			
<i>Glossopsitta concinna</i>	Musk lorikeet			
<i>Glossopsitta porphyrocephala</i>	Purple-crowned lorikeet (H)			
<i>Grallina cyanoleuca</i>	Magpie-lark			
<i>Gymnorhina tibicen</i>	Australian magpie			
<i>Hirundo neoxena</i>	Welcome swallow			
<i>Lichenostomus chrysops</i>	Yellow-faced honeyeater			
<i>Malurus cyaneus</i>	Superb fairy-wren			
<i>Melithreptis gularis</i>	Black-chinned honeyeater		V	V
<i>Melithreptis lunatus</i>	White-naped honeyeater			
<i>Melithreptus brevirostris</i>	Brown-headed honeyeater			
<i>Neochmia temporalis</i>	Red-browed finch			
<i>Pachycephala pectoralis</i>	Golden whistler			

SCIENTIFIC NAME	COMMON NAME	STATUS		
		AUS	SA	REG
<i>Pachycephala rufiventris</i>	Rufous whistler			
<i>Pardalotus striatus</i>	Striated pardalote (H)			
<i>Petrochelidon nigricans</i>	Tree martin (H)			
<i>Petroica multicolor</i>	Scarlet robin			
<i>Phaps chalcoptera</i>	Common bronzewing			
<i>Phylidonyris novaehollandiae</i>	New Holland honeyeater			
<i>Phylidonyris pyrrhoptera</i>	Crescent honeyeater			
<i>Platycercus elegans</i>	Adelaide rosella (H)			
<i>Platycercus elegans</i>	Crimson rosella (H)			
<i>Podargus strigoides</i>	Tawny frogmouth			
<i>Psephotus haematonotus</i>	Red-rumped parrot (H)			
<i>Rhipidura fuliginosa</i>	Grey fantail			
<i>Rhipidura leucophrys</i>	Willie wagtail			
<i>Sericornis frontatus</i>	White-browed scrub-wren			
<i>Smicornis brevirostris</i>	Weebill			
<i>Strepera versicolor</i>	Grey currawong			U
<i>Todiramphus sanctus</i>	Sacred kingfisher			
<i>Trichoglossus haematodus</i>	Rainbow lorikeet (H)			
<i>Turdus merula</i>	*Common blackbird			
<i>Zosterops lateralis</i>	Silvereeye			

Status of species in South Australia under the *National Parks and Wildlife Act 1972*; *Environment Protection and Biodiversity Conservation Act 1999*; Carpenter and Reid (1997).

Source: DEH Biological Database of SA (Survey; Opportune; Reserves; Plant Population); ForestrySA.

Mammals

* = introduced species

SCIENTIFIC NAME	COMMON NAME	STATUS	
		AUS	SA
<i>Antechinus flavipes</i>	Yellow-footed Antechinus		
* <i>Capra hircus</i>	Goat		
* <i>Cervus dama</i>	Fallow deer		
<i>Chalinolobus gouldii</i>	Gould's wattled bat		
<i>Chalinolobus morio</i>	Chocolate wattled bat		
<i>Isoodon obesulus</i>	Southern-brown bandicoot	E	V
* <i>Lepus capensis</i>	Brown hare		
<i>Macropus fuliginosus</i>	Western-grey kangaroo		
<i>Mormopterus petersi</i>	Southern freetail bat		
* <i>Mus musculus</i>	House mouse		
<i>Nyctophilus geoffroyi</i>	Lesser long-eared bat		
* <i>Oryctolagus cuniculus</i>	European rabbit		
<i>Phascolarctos cinereus</i>	Koala		R
<i>Pseudocheirus peregrinus</i>	Common ringtail possum		
<i>Rattus fuscipes</i>	Bush rat		
<i>Rattus lutreolus</i>	Swamp rat		
<i>Tachyglossus aculeatus</i>	Short-beaked echidna		
<i>Tadarida asutralis</i>	White-striped freetail bat		
<i>Trichosurus vulpecula</i>	Common brushtail possum		
<i>Vespadelus darlingtoni</i>	Large forest bat		
<i>Vespadelus regulus</i>	Southern forest bat		
<i>Vulpes vulpes</i>	Red fox		

Status of species in South Australia under the *National Parks and Wildlife Act 1972*; *Environment Protection and Biodiversity Conservation Act 1999*.

Source: DEH Biological Database of SA (Survey; Opportune; Reserves; Plant Population); ForestrySA.

Reptiles and Amphibians

SCIENTIFIC NAME	COMMON NAME	STATUS	
		AUS	SA
<i>Aprasia striolata</i>	Lined worm-lizard		
<i>Bassiana duperreyi</i>	Three-lined eastern skink		
<i>Egernia whitii</i>	White's skink		
<i>Hemiergis decresiensis</i>	Three-toed earless skink		
<i>Lampropholis guichenoti</i>	Garden skink		
<i>Lerista bougainvillii</i>	Bougainville's skink		
<i>Limnodynastes dumerili</i>	Bull frog		
<i>Phyllodactylus marmoratus</i>	Marbled gecko		
<i>Pseudechis porphyriacus</i>	Red-bellied black snake		
<i>Pseudonaja textilis</i>	Eastern brown snake		
<i>Pseudophryne bibroni</i>	Brown toadlet		
<i>Pyogopus lepidopus</i>	Common scaly-foot		
<i>Tiliqua rugosa</i>	Sleepy lizard		
<i>Varanus rosenbergi</i>	Heath goanna		R

Status of species in South Australia under the *National Parks and Wildlife Act 1972*; *Environment Protection and Biodiversity Conservation Act 1999*.

Source: DEH Biological Database of SA (Survey; Opportune; Reserves; Plant Population).

APPENDIX 3

THREATENED SPECIES CONSERVATION CATEGORIES

Category Source:

TAXA	STATUS SOURCE		
	Australia	SA	Regional
Plants	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	<i>National Parks and Wildlife Act 1972 Schedules 7, 8, 9 (2000 update)</i>	Lang & Kraehenbuehl (1998)
Birds			Carpenter & Reid (1997)
Mammals			
Reptiles			
Amphibians			

Category Definitions:

General Category	EPBC Act 1999	NPWS Act 1972	Lang & Kraehenbuehl (1998)	Carpenter & Reid (1997)
Extinct	Extinct (X)		Extinct/Presumed Extinct (X)	Extinct (X)
	Extinct in the Wild (EW)			
Threatened	Critically Endangered (CE)			
	Endangered (E)	Endangered (E)	Endangered (E) Threatened (T)	Endangered (E)
	Vulnerable (V)	Vulnerable (V)	Vulnerable (V)	Vulnerable (V)
Rare			Uncertain (K)	
		Rare (R)	Rare (R)	Rare (R)
				Indeterminate (K)
Uncommon	Conservation Dependent (CD)		Uncommon (U)	Uncommon (U)
			Not yet assessed, but of possible significance (Q)	
Common			*Not of particular significance/ Common (N)	Common (C)
				Introduced (I)

* also indicated by a blank entry

APPENDIX 4 - LEGISLATION AND FORESTRYSA POLICY

The management actions proposed in Section 5 of this management plan are supported by Regulations under the Acts, and guidelines from Policies in the following list:

Aboriginal Heritage Act 1988 (SA)
Fire and Emergency Services Act 2005 (SA)
Forestry Act 1950 (SA)
Mining Act 1971 (SA)
National Parks and Wildlife Act 1972 (SA)
Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
Native Title (South Australia) Act 1994
Native Vegetation Act 1991 (SA)
Natural Resources Management Act 2004 (SA)
Petroleum Act 2000 (SA)

ForestrySA Corporate Policy	Policy No.
Community Use	PCP0031
Volunteers	PCP0033
Compliance	PCP0034
Signs	PCP0035
Prescribed Fire in Native Forest Reserves	PCP0040
Management of Aboriginal Cultural Heritage	PCP0046
Environmental Management	PCP0047
Pest Management	PCP0052
Managing the Conservation Zone	PCP0053
Firewood Collection	PCP0056
ForestrySA Community Forestry Policy	Policy No.
Day Visitors	PCF0002
Recreational Trails	PCF0003
Orienteering and Rogaining	PCF0006
Pets in Forests	PCF0007
Cycling	PCF0010
Public Vehicle Access	PCF0011
Military Exercises	PCF0015
Public Events	PCF0016

APPENDIX 4a- AGENCY AND COMMUNITY PROGRAM INVOLVEMENT

Baptist Community Services – Work for the Dole Program

Department for Environment & Heritage

Department of Correctional Services

Department of Family & Youth Services – Southern Youth Justice Team

Fleurieu Animal & Plant Control Board

(now part of Adelaide and Mount Lofty Ranges Natural Resources Management Board)

Friends of the Forests Volunteer & Community Programs

Greening Australia - GreenCorps; Youth Conservation Corps

KnH Quality Time Services, Adelaide

Mount Bold/Scott Creek Biodiversity Hotspots Project

Reynella East Primary School

Urrbrae TAFE – Natural Resource Management students

APPENDIX 5 – LAND TENURE**Mount Panorama and Knott Hill NFR**

TENURE	LESSEE/OWNER	TERM
Sections 204, 205, 206		
Miscellaneous Lease 713	Mortimer Stuckey	1/10/1883 – 11/12/1889
Miscellaneous Lease 713A	John McTaggart	12/12/1889 – 30/9/1897
Dedicated as Forest Reserve		21/10/1897
Sections 207, 209		
Miscellaneous Lease 717	William Oakley	1/10/1883 – 30/9/1887
Annual Licence 6218	Licensee not known	1/10/1887 – 29/8/1900
Dedicated as Forest Reserve		30/8/1900

Christmas Hill NFR

TENURE	LESSEE/OWNER	TERM
Sections 245 and 246:		
ptn. Miscellaneous Lease 729	Charles A. Michelmore	1/10/1883 – 27/8/1885
Miscellaneous Lease 2807	Charles A. Michelmore	1/10/1885 - 1886
Transferred to:	Charles Bell	1886
Perpetual Lease 7843	Charles Bell	1/7/1903 - 1912
Perpetual Lease 7843A	William E.T. Richards	1912
Section 245		
Perpetual Lease 7843A	James Hugh Hollis	1913 – 16/10/1917
Section 246		
Perpetual Lease 7843B	Cyril A. Whittlesea	1913 – 16/10/1917
Purchased by:	Woods and Forests Dept.	17/10/1917
Sections 247 and 248:		
ptn. Miscellaneous Lease 729	Charles A. Michelmore	1/10/1883 – 27/8/1885
Miscellaneous Lease 2808	Charles A. Michelmore	1/10/1885 - 1886
Perpetual Lease 7842	Charles Bell	1/7/1903 - 1912
Perpetual Lease 7842A	William E.T. Richards	1912
Perpetual Lease 7842B	Charles A. Whittlesea	1913 – 16/10/1917
Purchased by:	Woods and Forests Dept.	17/10/1917
Section 248		
Miscellaneous Lease 729	Charles A. Michelmore	1/10/1883 – 27/8/1885
Miscellaneous Lease 2813	Charles Bell	1/10/1885 – 30/6/1903
Perpetual Lease 7842 (as for Section 247)	Charles Bell	1/7/1903 - 1912
Section 251:		
Miscellaneous Lease 740	James Snell	1/10/1883 – 30/6/1886
Miscellaneous Lease 3114	William D. Clare	1/7/1886 – 9/2/1888
Miscellaneous Lease 4386	Charles Bell	1/4/1888 – 30/6/1903
Perpetual Lease 7842 (as for Section 247)	Charles Bell	1/7/1903 - 1912

TENURE	LESSEE/OWNER	TERM
Sections 252, 275 and 285:		
Miscellaneous Lease 730	M. Stuckey	11/10/1883 - 1892
Transferred to:	Charles Bell	1892 – 30/9/1897
Reserved in Govt. Gazette	Forest Reserve No. 48	21/10/1897
Section 275		
Forest Lease 603	George T. Bell	1/7/1898 – 29/4/1905
Section 252		
Forest Lease 669	William F. King and George A. Halsey	1/8/1907 – 7/11/1907
Forest Lease 675	Anthony F. Johnson jnr.	8/10/1908 – 24/12/1908

Section 253:		
Miscellaneous Lease 2811	Ezra Branford	1/10/1885 - 1886
Transferred to:	Alfred Stevens	1886 - 1899
Transferred to:	Charles Bell	1899
Perpetual Lease 7842	Charles Bell	1/7/1903 – 25/8/1912
Transferred to:	William E.T. Richards	26/8/1912 – 10/6/1914
Transferred to:	James H. Hollis	11/6/1914
Purchased by:	Woods and Forests Dept.	17/10/1917

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