



Big Scrub Nature Reserves

(incorporating Andrew Johnson Big Scrub, Victoria Park, Davis Scrub, Hayters Hill, Boatharbour and Wilson Nature Reserves)

Type-1 Reserve Fire Management Strategy

1. Introduction

The Big Scrub Nature Reserves Type-1 Reserve Fire Management Strategy (RFMS) encompasses the following six nature reserves:

- Andrew Johnson Big Scrub Nature Reserve
- Victoria Park Nature Reserve
- Davis Scrub Nature Reserve
- Hayters Hill Nature Reserve
- Boatharbour Nature Reserve
- Wilson Nature Reserve

1. Fire Management Principles

The Department of Environment and Conservation (DEC) manages about seven per cent of the land area of NSW. These areas have been reserved to conserve their natural and cultural values. These values include biodiversity, landscapes, Aboriginal sites, historic structures and recreational settings.

Under the *Rural Fires Act 1997*, the NPWS is a fire authority and is responsible for the management of fire on all lands under its control. This includes the detection and suppression of fires and the implementation of risk prevention programs to protect life and property from fires. The NPWS also assists with the suppression of fires on adjacent lands, as may be required under plans prepared under the *Rural Fires Act 1997*.

Cooperative arrangements are derived from the Bush Fire Coordinating Committee and implemented through local Bush Fire Management Committees. The other three agencies that participate in cooperative fire management across NSW are the Department of Primary Industries, the NSW Rural Fire Service and NSW Fire Brigades.

NPWS is an active member of the Northern Rivers and Far North Coast Bush Fire Management Committees.

The management of fire is a critical component of land management across the NSW landscape. As both a fire authority and conservation agency, DEC plays an important role in protecting life and property and conserving natural and cultural heritage.



2. Fire Management Objectives

The primary objectives of fire management by the NPWS are to:

- protect life, property and community assets from the adverse impacts of fire;
- develop and implement cooperative and coordinated fire management arrangements with other fire authorities, reserve neighbours and the community;
- manage fire regimes within reserves to maintain and enhance biodiversity; protect Aboriginal sites known to exist within NSW and historic places and culturally significant features known to exist within reserves from damage by fire; and
- assist other fire agencies, land management authorities and landholders in developing fire management practices to conserve biodiversity and cultural heritage across the landscape.

The maintenance of biodiversity to avoid the extinction of natural species, populations and communities within the landscape underpins fire management activities within the NPWS.

The NSW National Parks and Wildlife Service *Fire Management Manual* details the policies and procedures for all fire management planning and fire operations on lands reserved under the *National Parks and Wildlife Act 1974* and any land managed by DEC on behalf of the Minister for the Environment.

This strategy is a Relevant Plan under Section 38(4) and Section 44(3) of the Rural Fires Act 1997.

3. The Fire Environment

3.1 Fire history

There is little or no recorded history of fire in the Big Scrub Nature Reserves.

3.2 Topography

The area covered by the Big Scrub is a low volcanic plateau associated with the Mount Warning shield volcano lying between 100 and 150 metres above sea level. There are however, variations in both topography and soil types in the six areas now dedicated as the Big Scrub Nature Reserves.

Boatharbour Nature Reserve:

Boatharbour Nature Reserve (24 ha) is situated on the Wilsons River near its confluence with Coopers Creek. The four separate sections which comprise this nature reserve are bounded by Wilsons River and Coopers Creek, grazing land and the Lismore-Bangalow Road. A small tributary creek flows north-easterly through the nature reserve. The whole area is subject to periodic flooding from the Wilsons River and from Coopers Creek which lies to the north.

Victoria Park Nature Reserve:

Victoria Park Nature Reserve (17.5 ha) is located 16 km south-east of Lismore near the village of Meerschaum Vale. It is bounded on two sides by roads and paddocks. Surrounding land use is primarily fruit growing and cattle grazing. The gently sloping topography of Victoria Park Nature Reserve is typical of much of the Big Scrub country. No distinct drainage lines occur, but surface runoff eventually drains in a south-easterly direction into Tuckean Swamp, 2 km to the south.

Davis Scrub Nature Reserve:

Davis Scrub Nature Reserve (13.9 ha) is located near the village of Rous and is surrounded by agricultural land used for grazing and macadamia growing.

Davis Scrub Nature Reserve slopes gently to the west. There is a fairly distinct drainage line running from east to west that originates near the middle of the forest.

Hayters Hill Nature Reserve:

Hayters Hill Nature Reserve (4.5 ha) is located 5 km south-west of Byron Bay on a moderately steep escarpment which lies on the north-eastern edge of the original Big Scrub. It is bounded by the Byron Bay to Bangalow Road, the Lismore-Murwillumbah railway line and by banana growing and grazing properties.

Hayters Hill Nature Reserve has a steep and rocky aspect exposed to the north-east.

Andrew Johnston Big Scrub Nature Reserve:

Andrew Johnston Big Scrub Nature Reserve (22.5 ha) is located 9km west of Bangalow and 2km south-west of the village of Eureka. It is bounded by Coopers Creek on the north-west side and by grazing land and macadamia growing.

The Andrew Johnston Big Scrub Nature Reserve slopes to the north-west and north-east. A small, ephemeral creek runs north near the eastern edge of the nature reserve.

Willson Nature Reserve:

Wilson Nature Reserve (27.2 ha) is located on the southern limits of the Lismore urban area. It is bounded by the Wyrallah Road, a water reservoir, urban dwellings and grazing land.

Wilson Nature Reserve has a steeply sloping east to south aspect. Two major drainage lines run towards the east and join to form a small creek.

3.3 Vegetation

The Big Scrub Nature Reserves primarily contain subtropical rainforest flora and fauna, which have little or no adaptations to fire and are fire intolerant. Fire should be excluded from rainforest communities.



Some parts of the Big Scrub Nature Reserves contain areas of wet sclerophyll forest, which is adapted to a regime of infrequent fire that may require application of prescribed fire in the future.

The plant communities of each nature reserve are discussed below.

Boatharbour Nature Reserve:

One hundred and ninety plant species have been recorded in Boatharbour Nature Reserve. The nature reserve is a sub-tropical rainforest described as a pepperberry - fig sub-alliance. It exhibits a classical three storey structure and includes many of the largest trees occurring in the Big Scrub remnants.

The reserve also includes an ecotone between the rainforest and a woodland community dominated by forest redgum (*Eucalyptus tereticornis*) *Austromyrtus fragrantissima* and *Ochrosia moorei* are two endangered plant species listed under Schedule 1 of the Threatened Species Conservation Act. Plants occurring in the nature reserve and listed under Schedule 2 of that Act include *Floydia praealta* and *Desmodium acanthocladum*.

Victoria Park Nature Reserve:

One hundred and fifty-two plant species have been recorded in Victoria Park Nature Reserve. The plant community on the nature reserve is a subtropical rainforest, white booyong sub-alliance with a classical three storey structure including many tall strangler figs (*Ficus watkinsiana* and *F. macrophylla*) as a feature.

Plants occurring in Victoria Park Nature Reserve and listed under Schedule 2 of the Threatened Species Conservation Act include *Baloghia marmorata*, *Macadamia tetraphylla* and *Floydia praealta*.

About half of the remnant is rainforest and a further quarter is under rainforest reforestation. The remainder of the nature reserve includes a picnic area and a cleared paddock proposed for rainforest reforestation work.

Davis Scrub Nature Reserve:

Davis Scrub Nature Reserve is a sub-tropical rainforest predominantly of a black bean-red bean sub-alliance. One hundred and thirty-four plant species have been recorded.

Two large Moreton Bay figs (*Ficus macrophylla*) stand out as emergents. There are also exceptionally large specimens of small-leaved doughwood (*Melicope micrococca*), red bean (*Dysoxylum mollissimum*) and rosewood (*Dysoxylum fraserianum*). Species listed under Schedule 2 of the Threatened Species Act include *Syzygium hodgkinsoniae*, *Tinospora tinosporoides* and *Macadamia tetraphylla*. Other species of interest include *Archidendron muellerianum*, *Rhodamnia maideniana*, *Acronychia baeuerlenii* and a species of *Quassia*.

Hayters Hill Nature Reserve:

Hayters Hill Nature Reserve is a dry rainforest dominated by emergent hoop pines (*Araucaria cunninghamii*). One hundred and twenty-five plant species have been identified.

Species listed under Schedule 2 of the Threatened Species Act include *Floydia praealta*, *Owenia cepiodora*, *Syzygium hodkinsoniae* and *Tinospora tinosporoides*. Other species of interest include *Archidendron muellerianum* and *Acronychia baeuerlenii*.

Andrew Johnston Nature Reserve:

Floyd (1977) describes this rainforest as the "finest and most impressive remnant of the Big Scrub". It includes 4 distinct rainforest types, combining elements typical of the Victoria Park, Davis Scrub and Booyong remnants, together with dry rainforest elements on the western edge.

Over 170 species of trees, shrubs and vines have been identified from this reserve. One species of native plant which occurs in Andrew Johnston Nature Reserve, *Ochrosia moorei* is listed on Schedule 1 of the Threatened Species Conservation Act as endangered. Species listed on Schedule 2 of the Threatened Species Conservation Act include *Desmodium acanthocladum*, *Syzygium hodgkinsoniae*, *Floydia praealta*, and *Tinospora tinosporoides*. Other species of interest include *Archidendron muellerianum*, *Trichosanthes subvelutina* and *Milletia australis*.

Wilson Nature Reserve:

Wilson Nature Reserve is a large sample of dry rainforest remaining from the periphery of the Big Scrub. It is dominated by emergent hoop pines. Part of the reserve is sclerophyll forest dominated by forest red gum and pink bloodwood (*E. intermedia*).

Over 190 species of plant have been recorded from Wilson Nature Reserve. One species of native plant which occurs in Andrew Johnston Nature Reserve, *Austromyrtus fragrantissima*, is listed on Schedule 1 of the Threatened Species Conservation Act as endangered. Species listed on Schedule 2 of the Threatened Species Conservation Act include *Desmodium acanthocladum* and *Tinospora tinosporoides*. Other species of interest include *Archidendron muellerianum*, *Xeromphis* sp. and *Parsonsia lilacina*.

3.5 Built assets vulnerable to fire

There are 5 residences along City View Drive, adjacent to the northern boundary of Wilson Nature Reserve, that are vulnerable to fire.

3.6 Natural assets vulnerable to fire



The Big Scrub Nature Reserves have been established to protect remnant areas of sub-tropical rainforest which are either fire-free or subject to very infrequent fire.

The Big Scrub remnants are the sole relics of the former sub-tropical rainforest communities and afford valuable insights into what the rainforest may have been like before clearing. The remnants are also important as foci for the dispersal of rainforest seeds to nearby regrowth areas.

Andrew Johnston Big Scrub and Boatharbour Nature Reserves have been listed as containing Lowland Rainforest on Floodplain in the NSW North Coast bioregion by the NSW scientific committee. This threatened ecological community has been listed under Part 3 Schedule 1 of the Threatened Species Conservation Act 1995.

The Big Scrub Nature Reserves are significant as a rich avifauna habitat. Locally, many species are highly dependant upon these rainforest remnants including species typically associated with open habitats. Most bird species are highly mobile and unlikely to reside permanently within any one of the nature reserves. The protection of a system of remnant areas is however, essential for their continued survival in the district.

The marbled frogmouth (*Podargus ocellatus*) is known to be resident at Wilson Nature Reserve. This bird is listed as vulnerable under Schedule 2 of the Threatened Species Conservation Act.

Mammals recorded from the Big Scrub Nature Reserves generally include species not fully dependent upon rainforest habitat. Species such as the common ringtail possum (*Pseudocheirus peregrinus*) and the mountain brushtail possum (*Trichosurus caninus*) are widespread in the reserves and surrounding rural lands.

The red-necked pademelon (*Thylogale thetis*) is found in Victoria Park and Davis Scrub and is dependent upon rainforest and adjacent grasslands and woodlands.

Microchiropteran bats are likely to inhabit all the Big Scrub Nature Reserves, including species listed as vulnerable under Schedule 2 of the Threatened Species Conservation Act. Information on these species is inadequate.

The grey-headed flying fox (*Pteropus poliocephalus*) forms ephemeral camps in Boatharbour and Davis Scrub Nature Reserves and may cause localised canopy damage. Grey-headed flying foxes are important as dispersal agents for rainforest plants. Also present in the nature reserves are black flying foxes (*P. alecto*) and little red flying foxes (*P. scapulatus*).

Koalas (*Phascolarctos cinereus*) are known to range through the sclerophyll forest in Wilson Nature Reserve. The koala is also listed under Schedule 2 of the Threatened Species Conservation Act.

The herpetofauna includes a few species solely dependent upon the rainforest habitat such as the southern angle-headed dragon (*Gonocephalus spinipes*) and the skink *Ophioscincus truncatus*.

Koalas and dry rainforest may be threatened by upslope runs of fire through the wet sclerophyll forest on the lower slopes of Wilson Nature Reserve. There is potential for roadside ignitions on Wyrallah Road, especially during periods of drought.

3.7 Cultural Heritage values vulnerable to fire

There are no Aboriginal sites recorded for the Big Scrub Nature Reserves however, the rainforests of the Big Scrub and Wilson Nature Reserve may be associated with Aboriginal mythology.

There are no cultural heritage sites within the Big Scrubs Nature reserves vulnerable to fire.

3.8 Bushfire risk

The Big Scrub Nature Reserves pose little threat to life and property, except for 5 residences adjoining the northern boundary of Wilson Nature Reserve. where an existing clearing on the Nature Reserve will be maintained as an Asset Protection Zone (APZ) to compliment the APZ within the adjoining allotments.

The reserves are small, isolated remnants of mostly rainforest which has a low bush fire potential and in most conditions is unable to support bushfire, surrounded by cleared pasture, other agricultural land or urban development. There is little opportunity for fire to spread into or from the reserves.

Maintenance of control advantages on the reserves and on key adjoining lands, as well as most of the existing adjoining land use practices also minimise the potential for ignitions and spread beyond the reserves.

The bushfire combat agencies maintain response capabilities proportional to this level of threat.

3.8 Bushfire zoning

The 'NPWS Approach to Fire Management Planning' (2002) uses a system of bushfire management zones for bushfire management in NPWS reserves. These zones are compatible with the system adopted by the Bushfire Coordinating Committee for use in District Bushfire Management Committee (DBFMC) bushfire risk management plans.

The approach divides reserves into fire management zones. These zones are management areas where specified fire management operational objectives,

strategies and performance indicators have been developed to militate against the threat of a wildfire.

NPWS has assessed the Big Scrub Nature Reserves for fire management planning purposes and has zoned most of each reserve as a Land Management Zone (LMZ). The primary fire management objectives within this zone are to prevent the extinction of all species that are known to occur naturally within the reserve, and to protect culturally significant sites. Fire will be excluded from rainforest communities, and other vegetation communities will be managed with appropriate fire regimes.

The LMZ does not require intensive management and focuses on those actions appropriate to conserve biodiversity and cultural heritage including exclusion of fire from the reserve.

An asset protection zone is routinely maintained at Wilson Nature Reserve. The Wilson APZ primarily aims to provide fire protection to built assets along the northern boundary. A three metre wide strip is maintained within the reserve along the boundary and this compliments any fire protection measures undertaken by the landowners on the respective private properties.

The lower sections of this APZ in the east of the reserve provides protection from roadside ignitions along Wyrallah Road. Whilst no such ignitions are recorded, there is some potential for an ignition in this section to threaten upslope built assets and biodiversity values. The lower eastern sections of the Wilson APZ may be reduced in area over time to enable strategic rehabilitation and replanting to occur to meet nature conservation objectives of the reserve. This will be subject to funding and be designed to ensure that the modified APZ in this section remains functional.

Big Scrub Nature Reserves Type-1 Reserve Fire Management Strategy

Current Situation	Desired outcomes	Strategies	Priority
<p>These reserves generally have a very low fire risk</p> <p>Wilson APZ is routinely maintained to provide fire protection for built assets adjacent to the northern boundary. The lower eastern section is also maintained to reduce the likelihood of roadside ignitions from Wyrallah Road impacting on biodiversity values and residences adjoining the northern boundary.</p> <p>Mown areas around visitor facilities in Victoria Park Nature Reserve contribute to fire management as a fuel reduced control advantage.</p>	<p>Maintain existing APZ at Wilsons Park to minimize the threat of fire impacting on built assets and biodiversity values.</p> <p>Private landholders adjoining the northern boundary of Wilson NR are proactive in reducing the impacts of fire on their properties.</p> <p>The likelihood of fire impacting the Wilson NR from adjoining lands is reduced.</p>	<p>Liaise with adjoining landholders to identify control advantages within the Wilson NR.</p> <p>Encourage adjoining landholders of Wilson NR to seek advice from the Rural Fire Service so they can undertake appropriate bush fire protection activities on their properties.</p> <p>Maintain mown areas around visitor facilities in Victoria Park Nature Reserve</p> <p>Participate in the Bush Fire Management Committees and liaise with Rural Fire Service.</p>	<p>High</p> <p>High</p> <p>Medium</p> <p>High</p>

Legend for priorities

High priority activities are those imperatives to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.

Medium priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.

Low priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.

