TYPE 1
FIRE MANAGEMENT STRATEGY
BELFORD NATURE RESERVE

NSW National Parks and Wildlife Service
Central Coast Hunter Range Region
November 2006

Department of
Environment and Conservation (NSW)

our environment it's a living thing

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FIRE MANAGEMENT STRATEGY
for
Belford Nature Reserve

For additional information or enquiries on the management of fire in Belford Nature Reserve, please visit the Central Coast Hunter Range Region Office at 207 Albany Street, Gosford or telephone (02) 43204248 during business hours.

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3rd November 2006

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Belford Nature Reserve Type-1 Fire Management Strategy

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 Singleton Bush Fire Management Committee.

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 and places, historic places and culturally significant features known to exist within NSW 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 are no recorded wildfires (records 1943-2005) or hazard reductions (1971-2005) for Belford Nature Reserve in the records held by DEC. The area was previously a State Forest. Forests NSW have been approached and confirmed that they also have no records of wildfire or hazard reduction for the area when it was under their management.

Belford Nature Reserve has been designated as a Land Management Zone (LMZ) for fire management planning purposes. The selection of LMZ is because the reserve is not directly adjacent to any built assets, which would be exposed to a high level of bushfire risk and does not have a history of bushfire ignitions or known areas of high bushfire potential. 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. The reserve is zoned Low/Moderate fire risk by the Muswellbrook, Singleton and Scone Bushfire Risk Management Committee – Bushfire Risk Management Plan.

3.2 Topography

Belford Nature Reserve (approximately 294 ha) is situated about four km west of Branxton and 14 km south east of Singleton in the Central Hunter Valley (Figure 1). The reserve is situated on a broad low hill, with minor erosional gullies and ephemeral streamlines incising parts of it. The southern boundary of the reserve is bordered by a four lane dual carriageway. The surrounding lands to the east and west are predominantly cleared with the majority of any built assets generally being surrounded by cleared land or having cleared land between the built environment and the reserve vegetation.

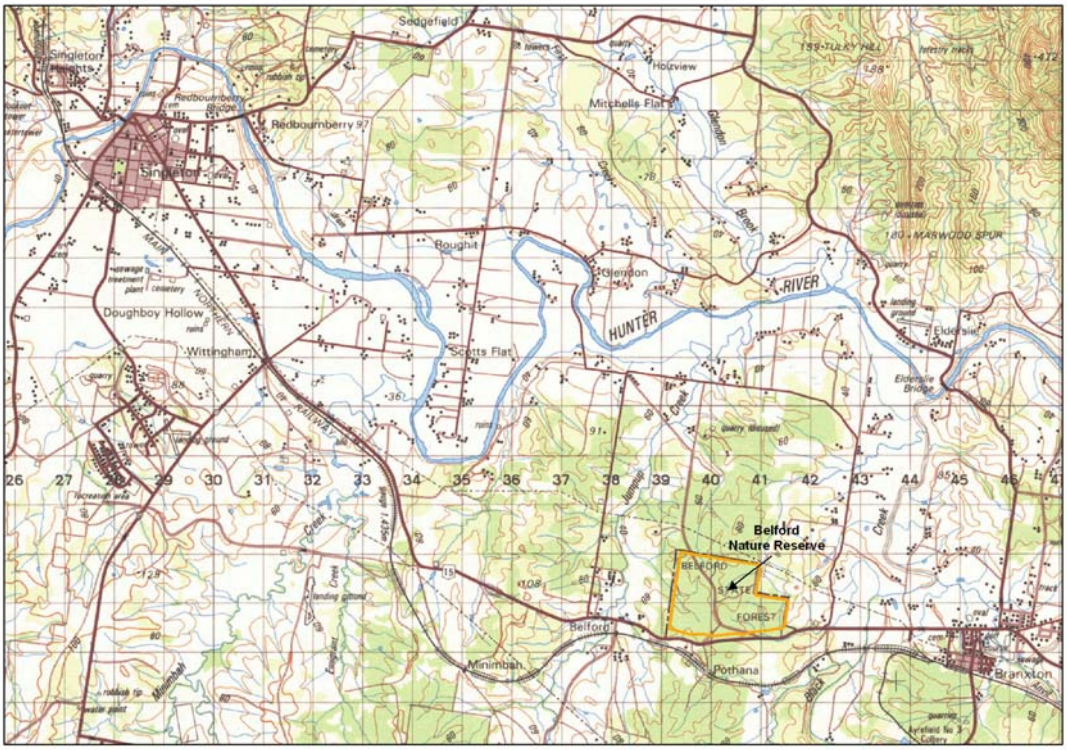

Figure 1: Location of Belford Nature Reserve.

3.3 Vegetation

Belford Nature Reserve contains eucalypt and swamp oak vegetation. *Central Hunter Ironbark – Spotted Gum – Grey Box Forest* is the predominant vegetation community) comprising of an overstorey dominated by Spotted Gum (*Corymbia maculata*), Narrow-leaved Ironbark (*Eucalyptus crebra*),Grey Box (*Eucalyptus moluccana*) and Broad-leaved Ironbark (*Eucalyptus fibrosa*). There may be a sparse understorey typically of bulloak and acacia species with a sparse to moderately dense ground cover. This community is closely related to the *Lower Hunter Spotted Gum – Ironbark Forest* which is listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995* (TSC Act). There are small isolated areas of *Hunter Lowlands Red Gum Forest* a mid-high to tall open forest with a typical overstorey of Forest Red Gum (*Eucalyptus tereticornis*), Narrow-leaved Ironbark (*Eucalyptus crebra*) and Rough-barked Apple (*Angophora floribunda*) with a characteristic sparse and/or grassy understorey. *Central Hunter Swamp Oak Forest*, a tall forest characterised by Swamp Oak (*Casuarina* glauca) occurs on two minor streams within the reserve.

Most of the forest vegetation in Belford Nature Reserve has been heavily logged in past decades with the last logging occurring in the early 1980's. This past use has created a relatively uniform sclerophyll forest with little environmental variation and few mature or hollow bearing trees. There are moderate amounts of logs and fallen timber on the ground but the majority of the reserve is very open with a sparse to moderate understorey.

3.4 Fire Weather

The statutory fire season occurs between 1 October and 31 March. This may be extended if weather conditions such as strong northwesterly winds, combined with low humidity lead to increased fire danger outside of this period. Bushfires in the central Hunter Valley generally occur in the hot dry months of mid to late spring and summer.

3.5 Built assets vulnerable to fire

There are no built assets within Belford Nature Reserve. The closest built assets to the reserve are two dwellings approximately 50 metres and 150 metres to the north of the northern boundary. There are several dwellings to the east of the reserve with the closest of these being 450 metres away. All of these dwellings are surrounded by cleared and/or grazed land. The cadastral road on the western boundary of the reserve is vegetated. A boundary fence shared with neighbouring properties surrounds the perimeter of the reserve. There is also a fence on both sides of the public road (Kirkton Road) which runs in a north south direction through the reserve. Locked gates are situated in the fenceline at entry points to the management trails. The New England Highway is situated immediately to the south of the reserve and may be affected by smoke or fire under the influence of a north or north westerly wind.

3.6 Natural assets vulnerable to fire

Logging in what was previously known as Belford State Forest ceased in the 1980's after which it was protected as a Spotted Gum Reserve in the 1990's. The majority of the trees are regrowth from logging, with small numbers of mature and hollow

bearing trees occurring along tracks and Kirkton Road (some in the road reserve). These trees should be protected wherever possible to maintain habitat variation. Fire should not exceed more than 30% of the zone at any one time where practicable, in order to further maintain a mosaic of age classes. Crown fires should be avoided at the lower end of interval ranges and fire regimes should aim to maintain floristic and structural diversity, as well as avoid the extinction of species and habitats. If the fire regime thresholds are exceeded or not met, the decline and/or local extinction of a species or habitat may be expected. Continual fires at the minimum interval will still result in biodiversity decline.

Community	**Equivalent Broad vegetation community**	**Fire Regime Minimum and maximum intervals**	**Area in Ha within Reserve**	**% of Reserve Note: 6 ha (2.0%) of Reserve not covered by vegetation mapping**
Central Hunter Ironbark – Spotted Gum – Grey Box Forest	Grassy Dry Sclerophyll Forest	Min 5 years Max 50 years	282.9 ha	96.2%
Hunter Lowlands Redgum	Grassy Dry Sclerophyll Forest	Min 5 years Max 50 years	4.5 ha	1.5%
Central Hunter Swamp Oak Forest	Grassy Dry Sclerophyll Forest	Min 5 years Max 50 years	0.5 ha	0.17%

Table 1. Fire Interval Guidelines for Protection of Vegetation Communities
Source: Bradstock *et al* (2003).

Three small drainage lines support minor areas of Hunter Lowlands Redgum Forest and dense Swamp Oak Forest. Hunter Lowlands Redgum Forest is listed as an Endangered Ecological Community under the TSC Act with inappropriate fire regimes noted as a threat to this community. These areas should be protected from inappropriate fire regimes and fire control operations.

Slaty Red Gum (*Eucalyptus glaucina*) listed as Vulnerable under the TSC Act has been located in Belford Nature Reserve. The NPWS Fire Response Database classes this species as a resprouter and notes that there is insufficient information available to determine its' sensitivity to fire. ATLAS records show this species to occur on a drainage line in the south western portion of the reserve, it may also occur in other areas of the reserve.

There are seven recorded threatened fauna species that are known to occur within Belford Nature Reserve listed in Table 2.

Common Name	Scientific Name	Status (NSW TSC Act)
Powerful Owl	*Ninox strenua*	Vulnerable
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	Vulnerable
Speckled Warbler	*Sericornis sagittatus*	Vulnerable
Brush-tailed Phascogale	*Phascogale tapoatafa*	Vulnerable
Eastern Freetail-bat	*Mormopterus norfolkensis*	Vulnerable
Eastern Bentwing-bat	*Miniopterus schreibersii oceanensis*	Vulnerable
Large-footed Myotis	*Myotis adversus*	Vulnerable

Table 2: Threatened fauna known to occur within Belford Nature Reserve
Source: NPWS Atlas of NSW Wildlife 2006

The majority of these species will benefit with the protection of mature and hollow bearing trees given the scarcity of these in the reserve. The Speckled Warbler and Grey-crowned Babbler will benefit from the retention of ground cover and litter.

3.7 Cultural Heritage values vulnerable to fire

One Aboriginal site has been recorded within the reserve and two others within one kilometre. All of these records are of aboriginal artefacts. These are not vulnerable to fire and it would be more likely that fire control operations would have an effect on artefacts in situ. Fire control operations should be limited to utilising existing roads and perimeter trails and/or fencelines which have already had significant disturbance.

3.8 Bushfire risk

Belford Nature Reserve is basically an area of regrowth forest that is surrounded on all sides by predominantly cleared and/or grazed land. Past fire history shows that the reserve is not a high bushfire risk. The most likely cause of any ignition within the reserve would be arson or a spread from an accidental ignition alongside the New England Highway. The risk of deliberate arson is reduced by the lack of public vehicular access into the reserve. The topography and vegetative structure of Belford Nature Reserve has resulted in a low to moderate bushfire risk.

3.9 Bushfire zoning

The 'NPWS Strategy for Fire Management' (2003) 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 reserve for fire management planning purposes and has zoned the reserve as a Land Management Zone (LMZ). The primary fire management

objectives for 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. The reserve has been designated as a LMZ because it is not adjacent to built assets which would be exposed to a high level of bushfire risk, and does not have a history of bushfire ignitions or known areas of high bushfire potential.

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.

4. Fire Management Strategy

ISSUE	OBJECTIVE(S)	STRATEGIES
Land Management Zone	▪ To prevent the extinction of all species that are known to occur naturally within the reserve (conserve biodiversity).	➢ As far as possible maintain fire regimes within specified intervals. ➢ Suppression or containment of fires inconsistent with the fire regime prescription. ➢ As far as possible implement specified threatened species management guidelines. ➢ As far as possible implement cultural heritage management guidelines.
Fire thresholds for vegetative communities	▪ Vegetative communities managed within desired fire thresholds	➢ Keep fire interval for vegetative communities within recognised appropriate fire regimes. ➢ Maintain a mosaic of fire regimes within zone in order to create a diversity of habitat age classes.
Containment Lines	▪ Containment Line construction	➢ Use existing features where possible.
Backburning	▪ Appropriate use when required	➢ As far as possible, backburning should take into account threatened species and cultural heritage guidelines. ➢ Backburning may be safely undertaken during the day when the fire danger is < High. ➢ On days when the fire danger > High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing.

Threatened Flora	▪ Threatened flora adequately protected	➢ As far as possible maintain fire regimes within specified intervals. ➢ Protect areas of Hunter Lowlands Red Gum Forest from machinery disturbance during fire fighting operations wherever possible.
Threatened Fauna	▪ Threatened fauna adequately protected	➢ Avoid high frequency fire, smoke or machinery around known sites, and habitats, and avoid all fire within fire sensitive communities. ➢ Maintain fire regimes that maintain floristic and structural diversity.
	Powerful Owl *Ninox strenua*	➢ Protect hollow bearing trees (live and dead ones) and large mature trees that will provide future hollows.
	Grey-crowned Babbler *Pomatostomus temporalis temporalis*	➢ Avoid too frequent burning resulting in the reduction of understorey leaf litter and fallen timber. ➢ Avoid burning during breeding season (June – November)
	Speckled Warbler *Sericornis sagittatus*	➢ Avoid too frequent burning resulting in the reduction of understorey leaf litter and fallen timber. ➢ Avoid burning during breeding season (August – January)
	Brush-tailed Phascogale *Phascogale tapoatafa*	➢ Protect hollow bearing trees (live and dead ones) and large mature trees that will provide future hollows. ➢ Avoid too frequent burning resulting in the reduction of understorey leaf litter and fallen timber reducing suitable foraging habitat.
	Eastern Freetail-bat *Mormopterus norfolkensis* Eastern Bentwing-bat *Miniopterus schreibersii oceanensis* Large-footed Myotis *Myotis adversus*	➢ Avoid fire around known roost sites (trees, culverts) where possible check any culverts before fire operations. ➢ Protect hollow bearing trees (live and dead ones) and large mature trees that will provide future hollows. ➢ Avoid mechanical and other disturbance around known roost sites.

Table 3: Fire Management Strategies for Belford Nature Reserve.

5. Fire Management Map

Fire control advantages are features that may be used to support bushfire suppression operations in and around Belford Nature Reserve. These include management trails, Kirkton Road, and the New England Highway displayed in Figure 2. Assets in and around Belford Nature Reserve such as Threatened Flora and Fauna are also presented in Figure 2.

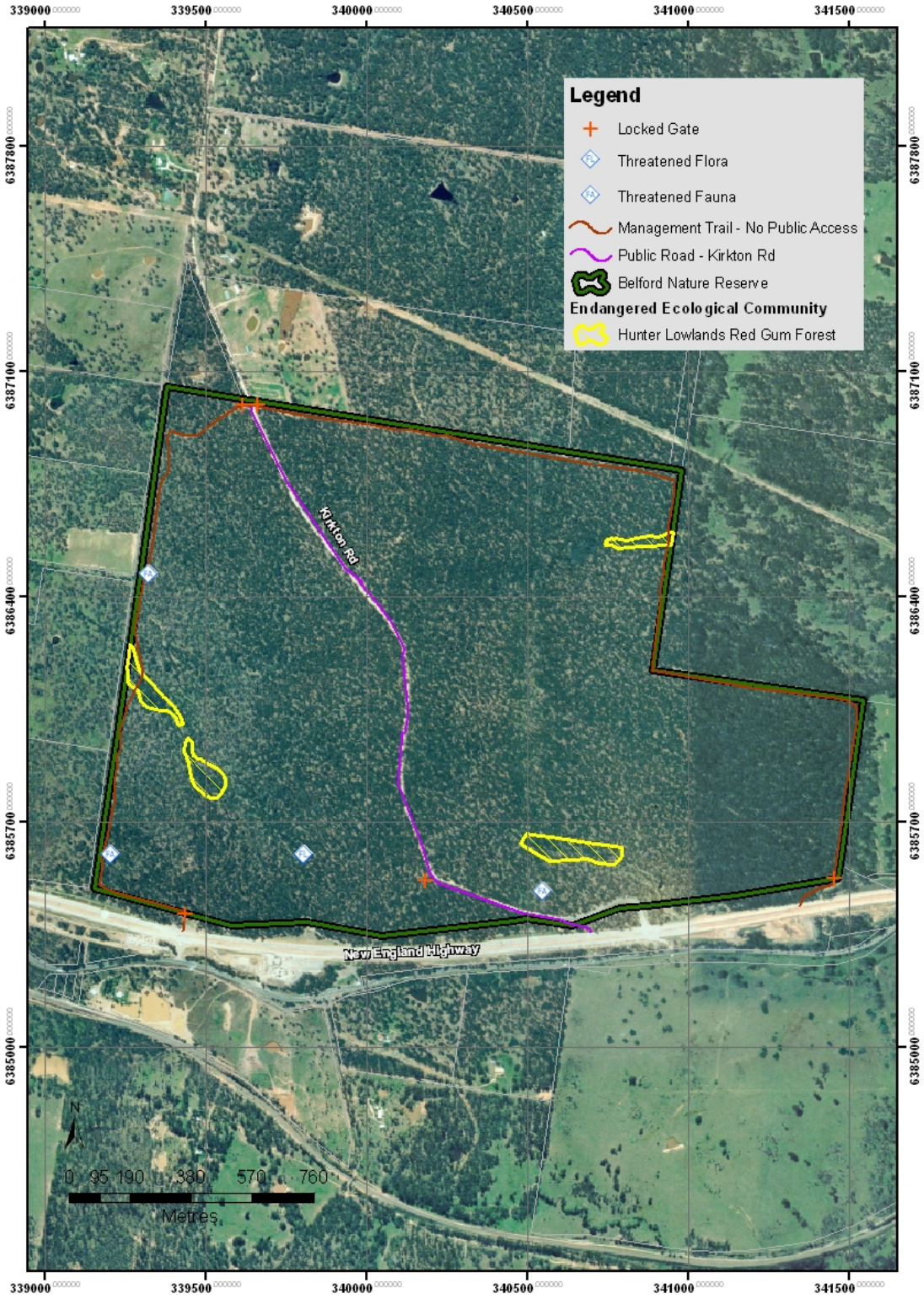

Figure 2: Fire Management map for Belford Nature Reserve.