

# Fire Management Strategy



## CAPE BYRON HEADLAND RESERVE

**PARKS AND  
WILDLIFE  
DIVISION  
DEPARTMENT OF  
ENVIRONMENT  
AND  
CONSERVATION**

**CAPE  
BYRON  
TRUST**



# **FIRE MANAGEMENT STRATEGY**

## **CAPE BYRON HEADLAND RESERVE**

Cape Byron Trust

Department of Environment and Conservation  
(Parks and Wildlife Division)

January, 2005

For further information on fire management on Cape Byron Headland Reserve please contact  
Cape Byron Trust



## **ACKNOWLEDGMENTS**

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# 1. INTRODUCTION

## 1.1. Scope and Purpose

This strategy is a relevant Plan under Section 38(4) and Section 44 (3) of Rural Fires Act 1997. It describes the tactics the Cape Byron Trust and Department of Environment and Conservation (Parks and Wildlife Division) will implement to meet their fire management obligations under the *Rural Fires Act 1997*, *National Parks and Wildlife Act 1974* and *Threatened Species Conservation Act 1995* on the Cape Byron Headland Reserve. This strategy also recommends actions to be undertaken by other key stakeholders and these recommendations will be referenced to the Byron Bushfire Management Committee (now amalgamated as part of Far North Coast Bushfire Management Committee). The Cape Byron Headland Reserve is gazetted as a State Conservation Area under the *NSW National Parks and Wildlife Act 1974*.

This strategy has been prepared in accordance with the policies and procedures for fire management detailed in the Parks and Wildlife Division Fire Management Manual (NPWS, 2001), Strategy for Fire Management (NPWS, 2003) and the Cape Byron Headland Reserve Plan of Management (Cape Byron Trust, 2002). This strategy aims to be consistent with the Byron Bushfire Risk Management Plan prepared under the *Rural Fires Act 1997*.

This strategy is supported by:

- Fire Management Works Schedules that are prepared annually and list the fire management tactics to be implemented each year.
- Bushfire Suppression Guidelines that are reviewed annually and identify natural, cultural and capital assets to be protected from bushfire and fire control advantages.
- Northern Rivers Region Incident Response Procedures which are prepared annually and detail general bushfire preparedness and response procedures of the Parks and Wildlife Division.
- The Byron Bushfire Management Committee Risk Management and Operations Plans.
- Planning for Bushfire Protection, A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners prepared by Planning NSW and Rural Fire Service.

This strategy is also supported by hardcopy maps and a Geographic Information System (GIS) database maintained at the National Parks and Wildlife Service, Northern Rivers Regional Office, Alstonville.

## 1.2. Fire Management Objectives

Consistent with the statutory obligations and policies of Parks and Wildlife Division, as defined in the Strategy for Fire Management (NPWS, 2003), the fire management objectives defined for the reserve are to:

- **Reduce the occurrence of human caused unplanned fires in the Reserve.**
- **Suppress unplanned fires occurring in the Reserve.**
- **Minimise the potential for the spread of bushfires within, from or into the Reserve.**
- **Protect persons and property in, or immediately adjacent to the Reserve from bushfires occurring in the Reserve.**
- **Manage fire regimes to avoid the extinction of all species that are known to or likely to occur naturally within the Reserve.**
- **Protect from damage by bushfires all Aboriginal sites, historic places and culturally significant features which are known to exist within the Reserve.**

### **1.3. Description of the Reserves**

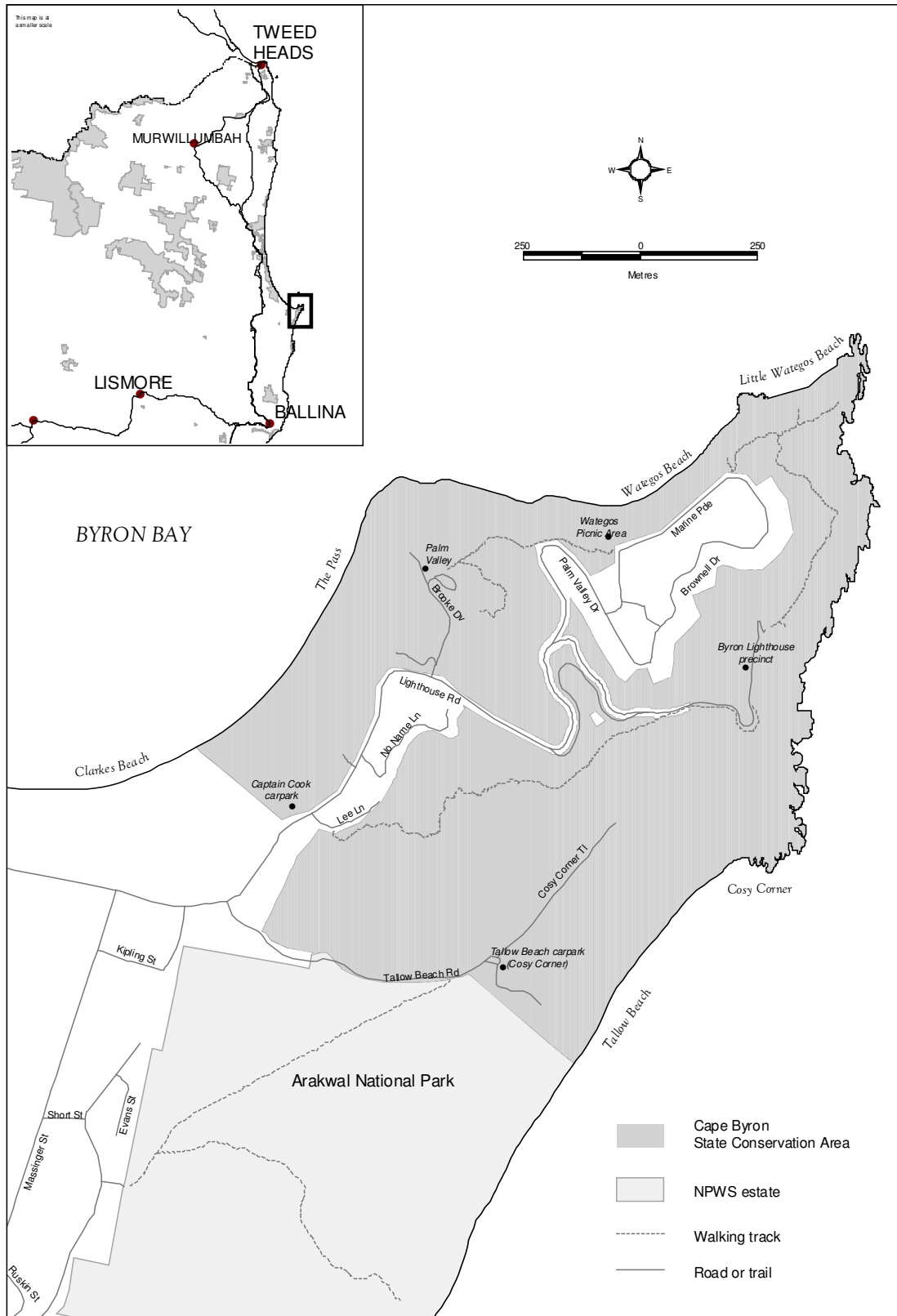
#### ***1.3.1. Location and Terrain***

The Cape Byron Headland Reserve, within the Byron Local Government Area is located immediately east of the township of Byron Bay on the far north coast of NSW approximately 55 kilometres south of the Queensland border (Map 1). Covering 98.5 hectares the Reserve takes in the most easterly point on the Australian mainland, and rises to a height of 100.4 metres above sea level making it the most elevated headland on the north coast of NSW.

The topography of the Reserve is of relatively high relief when compared to the immediate areas south and west of the Cape. The Reserve is characterised by its steep terrain and contains few level areas. The dominant topographic feature is the east-west ridge line of the cape which at its highest point (100.4 m AHD) supports the Cape Byron Lighthouse.

The Reserve has two major landforms of significantly different geology. A residual outcrop of the oldest rock formations in the region known as the Brisbane metamorphics (dated at 345-405 million years old) underlies and is often exposed throughout most of the Reserve. The second major landform is the coastal dune system inland of Tallow Beach.

Several seasonal creeks occur within Cape Byron's steep dissected ridges. The only permanent creek passes under Lighthouse Road and flows through Palm Valley, entering the sea at The Pass.



**Map 1: Location of Cape Byron Headland Reserve**

### **1.3.2. Fire Weather and History**

Fires on the northern NSW coast mostly occur in the hot and dry months of spring and early summer, with a peak in October. Dry northwesterly winds are of most concern as these occur during the fire season and have a marked influence on the behaviour of fire. Although fires can occur at any time of the year in this part of NSW, summer rains in December/January often (but not always) mark an end to the fire season (NPWS, 2001a).

The Keetch Byram Drought Index (KBDI) is a widely accepted measure of the seasonal bushfire potential. Higher KBDI values represent environmental conditions more likely to support wildfires. The KBDI values for this region are highest for the months September through to January, months characterised by low rainfall and winds predominantly from the north-east.

The mean annual rainfall for Cape Byron is 1733 mm. Maximum rainfall occurs during late summer-autumn with February and March having the highest average monthly rainfall, 189 and 215 mm respectively. Over half of the average annual rainfall falls during December to April, often as a result of cyclonic weather patterns pushing south from the Coral Sea.

Minimum average rainfall occurs during winter-spring with August and September receiving the lowest average rainfall of 94 and 69 mm respectively. The period from May to November is typically cooler and drier. Seasonal and yearly variability is however high and on occasions winter rainfall can be significant.

Seasonal variations to weather patterns within the region provide difficulties in planning for prescribed burns. Weather conditions are generally most favourable during late autumn following the period of highest rainfall and seasonal south-west to south-easterly winds.

#### **Fire History**

There is no documented history of fire in the Reserve. A few small, easily contained broken edged fires in the heath behind Cosy Corner in the early 1990's are the only accounts of fire events on the Reserve within the last 30 years (Blizzard and Tandy, pers. comm in Robinson 1999.) The presence of fire scarred trees in the heath behind Tallow Beach further indicate that fire has previously occurred in the Reserve. The large area of the Reserve covered by rainforest is evidence that fire has been excluded from large portions of the Reserve for an extended period of time.

There are no known records of property damage having occurred from the result of bushfires in the Reserve and no records of prescribed burnings having been carried out on the Reserve. The Reserve is surrounded by the ocean on its northern and eastern edge.

A varied fire regime has been recorded in the adjoining Arakwal National Park.

### **1.3.3. Natural and Cultural Heritage**

The Reserve forms part of a regional system of national parks and nature reserves along the northern NSW coastline. Despite a history of disturbance associated with gold and sand mining, agricultural practices, and urban development the Reserve continues to be of high ecological significance. Within the Cape Byron Headland Reserve 270 native species of vascular plants have been recorded in 25 distinct vegetation associations. The mosaic of different plant communities provides a diverse habitat for over 160 vertebrate species including over 100 species of birds.

## **Flora**

Photographic records show large areas of vegetation along Tallow Ridge, Tallow Beach, Palm Valley and the slopes above Wategos were cleared during the 1900's. Since clearing practices ceased in the 1960's and early 1970's the vegetation on the Reserve has been undergoing a phase of recovery and recolonisation.

The vegetation associations that comprise some of the larger habitats types on the Reserve include littoral and headland rainforest; wet and dry sclerophyll forests dominated by brush box *Lophostemon confertus* and ironbark *Eucalyptus siderophloia*; swamp sclerophyll forests and woodlands dominated by paperbarks *Melaleuca quinquenervia*; frontal dunes dominated by coast banksia *Banksia integrifolia* and headland grasslands (Parker 1989).

Several of the plant communities in the Reserve are remnants of formerly widespread vegetation types which are of local, regional or state significance. In particular, littoral rainforest which covers almost 50% of the land area on the Reserve, has a restricted distribution along the NSW coast today due to extensive past land clearing. Littoral Rainforest is listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995*.

Five plant species found on the Reserve are listed under the *Threatened Species Conservation Act 1995*: scented acronychia (*Acronychia littoralis*); *Xylosma terra-reginae*; a fern, (*Drynaria rigidula*); stinking cryptocarya (*Cryptocarya foetida*) and *Archidendron hendersonii*

Nationally Rare or Threatened (ROTAP) species found on the Reserve that are not listed under the *Threatened Species Conservation Act* are *Cordyline conjesta* (Rare) and *Plectranthus cremus* (Poorly Known).

## **Fauna**

The Reserve provides a diversity of fauna habitats including those of threatened frog, bird, reptile and bat groups. The Parks and Wildlife Division fauna atlas identifies nine threatened species as occurring on the Reserve with a further six identified as occurring on the Reserve in the Reserve Plan of Management.

## **Aboriginal Heritage**

The Reserve holds significant cultural value for the Byron Bay Arakwal people. It is an important fishing, hunting, gathering, living and meeting area for the Byron Bay Arakwal people.

A 1995 study of the reserve's Aboriginal cultural heritage identified sites, artefacts and traditional stories that highlighted the spiritual, cultural and historical significance of the Reserve to its traditional owners the Byron Bay Arakwal people. Two open camp/midden sites and scattered stone artefacts have been recorded on the Reserve at Palm Valley. One site, the Pass Midden, is the oldest and only large, substantially undisturbed foredune midden between Ballina and Tweed Heads. An Aboriginal Bora Ring has also been reported above Lighthouse Road.

In 1994 a Native Title Claim was lodged on behalf of the Byron Bay Arakwal people on all crown lands extending from Broken Head to the south and up to and including the Cape Byron Headland Reserve. This was accepted by the Native Title Tribunal on the 20 September 1995. In April 1997 a cooperative partnership between the Arakwal Aboriginal Corporation (the prescribed body corporate representing the Native Title claimants) and the Cape Byron Trust was established. The Arakwal Aboriginal Corporation represents the

interests of the Byron Bay Arakwal people. The Agreement acknowledges that the Byron Bay Arakwal people are the indigenous custodians of Reserve land, and that all use and occupation of the land is with the permission of the Arakwal people.

On 28 October, 2001 the Byron Bay Arakwal people achieved formal recognition of their rights through an Indigenous Land Use Agreement under the Commonwealth Native Title Act between the NSW Government and the Arakwal Aboriginal Corporation.

### **Historic Heritage**

Several structures of historic significance occur within the Reserve. The first group include the Lighthouse, former signal house, former Head Keepers Quarters, two semidetached houses that were formerly the Assistant Keepers Quarters, Workshop and an array of other ancillary structures (built in 1901). The second group comprises the Miner's Huts along Clarkes Beach.

#### **1.3.4. Capital Assets**

There is a variety of capital assets situated both on and adjoining the Reserve (Map 3). These include a permissive occupancy, council managed assets within the Reserve and freehold residential and tourism development adjoining some of the Reserve's boundaries. These assets are listed in Table 1.

#### **1.3.5. Recreational Use and Facilities**

The Reserve is a significant tourist attraction, with over 600,000 persons visiting the Lighthouse precinct each year and it is estimated that the entire Reserve receives in excess of one million local, regional, interstate and international visitors annually.

The Reserve provides a diverse and easily accessible range of recreation opportunities. Activities include walking, surfing, fishing, snorkeling, hang-gliding, land-based whale watching, educational activities and lighthouse tours. Low key picnic facilities are provided at the Pass, Palm Valley, Wategos and Tallow Beach. Holiday rental accommodation is available in the historic Lighthouse Keepers cottages and Clarkes Beach cottage.

The Reserve's natural and associated recreational values are a major attraction for locals and visitors to the township of Byron Bay.

#### **1.3.6. Summary of Key Fire Issues**

- **The Cape Byron Headland Reserve contains a diverse range of vegetation types with varying degrees of fire behaviour potential. Over 50% of the vegetated area of the Reserve is dominated by headland / littoral rainforest which has a lower fire behaviour potential. There are no significantly sized or continuous areas of highly pyrogenic vegetation.**
- **There is little evidence of past fires having occurred on the Reserve.**
- **Fire poses a major threat to the biodiversity values of the Reserve. The Reserve contains significant stands of littoral rainforest, an endangered ecological community, and five threatened plant species. All are fire sensitive or fire intolerant and fire should be excluded from locations in which they occur.**
- **Slope will act as a significant control advantage in terms of protecting capital assets outside of the Reserve. Fire spreads down slope with a significantly reduced rate of spread and intensity (compared to level ground or up slope). The**

majority of capital assets adjoining the Reserve are down slope from adjoining areas of vegetation (predominantly rainforest or vegetation with increasingly mesic elements). The combination of slope and vegetation types at these locations will result in reduced fire intensity at the urban interface and a reduced risk to adjoining capital assets.

- The asset protection tactics detailed in this strategy are varied in response to levels of risk to assets and site specific constraints and advantages.
- 66 hectares (68%) of the Reserve is mapped as SEPP 26 and SEPP 26 buffer zone (State Environmental Planning Policy No. 26 - Littoral Rainforest). Littoral Rainforest is listed as an Endangered Ecological Community under the *Threatened Species Act 1995*.
- The Reserve attracts large numbers of visitors during the fire danger period. Depending on the location and behaviour of a bushfire event on or near the reserve, visitors can be evacuated from the Reserve via the road system and numerous other egress points to the beaches fringing the Reserve.
- The lighthouse precinct offers an appropriate refuge for visitors or staff that do not or are unable to evacuate from the lighthouse / ridge top area.

## 2. BUSHFIRE RISKS

### 2.1. Introduction

Bushfire Risk is defined as the chance of a bushfire or inappropriate fire regime occurring and causing damage to assets within or adjacent to the reserve. Assets include life and property, cultural heritage and natural heritage.

Mapping of bushfire behaviour potential has been used to assess risk to assets. Bushfire behaviour potential mapping is derived by analysing mapping of fuels and slope and their combined effect on bushfire behaviour. As shown on Map 2 the Reserve is dominated by large areas of low and moderate fire behaviour potential with smaller, discontinuous areas of high fire behaviour potential interspersed.

The location and vulnerability of assets in relation to areas of bushfire potential determines the risk to those assets. Proximity to bushfire potential generally indicates increased risk, however the effect of slope on the direction of fire spread and intensity is significant in assessing the actual risk to assets in and adjoining this Reserve.

For the purpose of this plan all identified assets within and adjacent to the Reserve have been classified as being at Bushfire Risk. This includes those assets located in areas identified as having low and moderate fire behaviour potential. This has been done to ensure that appropriate strategies for the protection of all assets are considered in the plan.

Fires burn down slope with a greatly reduced rate of spread and intensity and burn up slope with a greatly increased rate of spread and intensity (compared to fire on level ground). The topography of Cape Byron and the effect of slope on fire behaviour combine to create a generally up slope fire path into the Reserve - ignitions in and adjacent to the Reserve will tend to spread up slope into the Reserve.

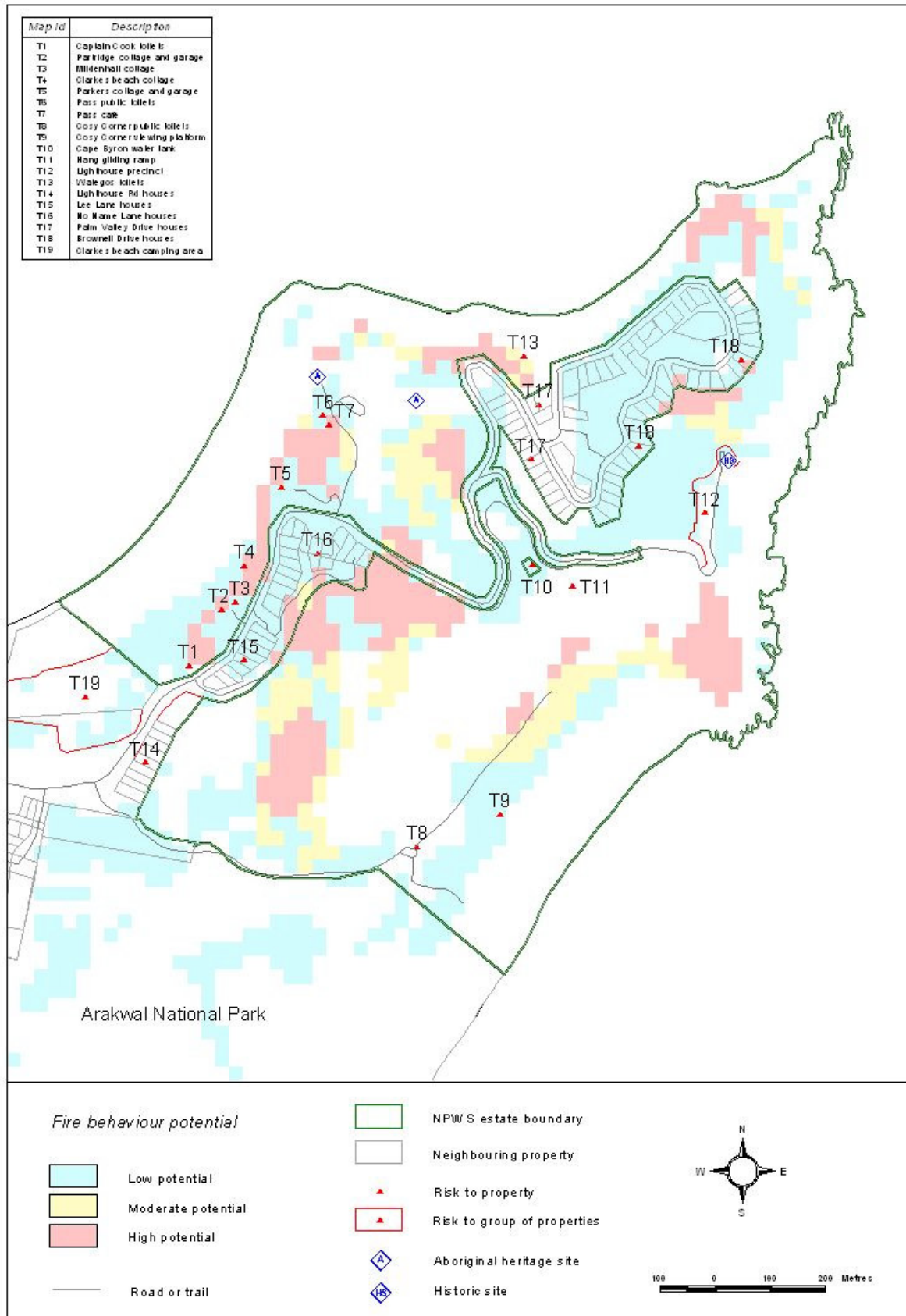
Where capital assets are down slope from areas of bushfire potential, the risk to these assets is greatly reduced. The risk to capital assets is further reduced where they are separated from areas of bushfire potential by fuel barriers such as trails, roads or breaks in vegetation, and where the vulnerability of the capital asset is lessened by the protective feature of the assets (buildings).

The protection tactics detailed for capital assets in this strategy are varied in response to levels of risk and site specific constraints and advantages, especially vegetation type and slope.

### 2.2. Life and Property

There are nineteen locations on and adjoining the reserve where life and property have been identified as being at Risk from Bushfire (Map 2, Table 1).





**MAP 2. Fire behaviour potential and locations of capital and cultural heritage assets at risk. Table 1. Locations within and around the Reserve where there is a risk to life or property (see Map 2).**

| Map ID. | Location                     | Tenure  |
|---------|------------------------------|---------|
| T1      | Captain Cook Toilets         | DEC     |
| T2      | Partridge Cottage & garage   | Private |
| T3      | Mildenhall Cottage           | DEC     |
| T4      | Clarkes Beach Cottage        | DEC     |
| T5      | Parkers Cottage & garage     | DEC     |
| T6      | Pass public toilets          | DEC     |
| T7      | The Pass Café                | DEC     |
| T8      | Cosy Corner public toilets   | DEC     |
| T9      | Cosy Corner viewing platform | DEC     |
| T10     | Cape Byron water tank        | BSC     |

| Map ID. | Location                   | Tenure  |
|---------|----------------------------|---------|
| T11     | Hang gliding ramp          | DEC     |
| T12     | Lighthouse precinct        | DEC     |
| T13     | Wategos toilets            | DEC     |
| T14     | Lighthouse Rd houses       | Private |
| T15     | Lee Lane Houses            | Private |
| T16     | No Name Lane Houses        | Private |
| T17     | Palm Valley Drive Houses   | Private |
| T18     | Brownell Drive Houses      | Private |
| T19     | Clarkes Beach Camping Area | BSC     |

DEC is the Department of Environment and Conservation (Parks and Wildlife Division)

### 2.3. Cultural Heritage

Based on the criteria specified in the Strategy for Fire Management (NPWS, 2003) cultural heritage sites are considered as being at High or Very High Risk from bushfire if the site is (i) located in or adjacent to an area of high bushfire potential; (ii) located in an area with a history of ignitions or (iii) located in an area with no ability to survive the passage of fire.

The Cape Byron Lighthouse Precinct is the only Historic Heritage Site located within the Reserve. Though not considered at high risk, there is the potential for bushfire to impact upon the precinct.

Of the known Aboriginal Heritage sites within the Reserves, none are at High Risk from bushfire. The location of the sites does not put them at risk of being damaged by earthmoving machinery or hand line construction during possible bushfire suppression operations.

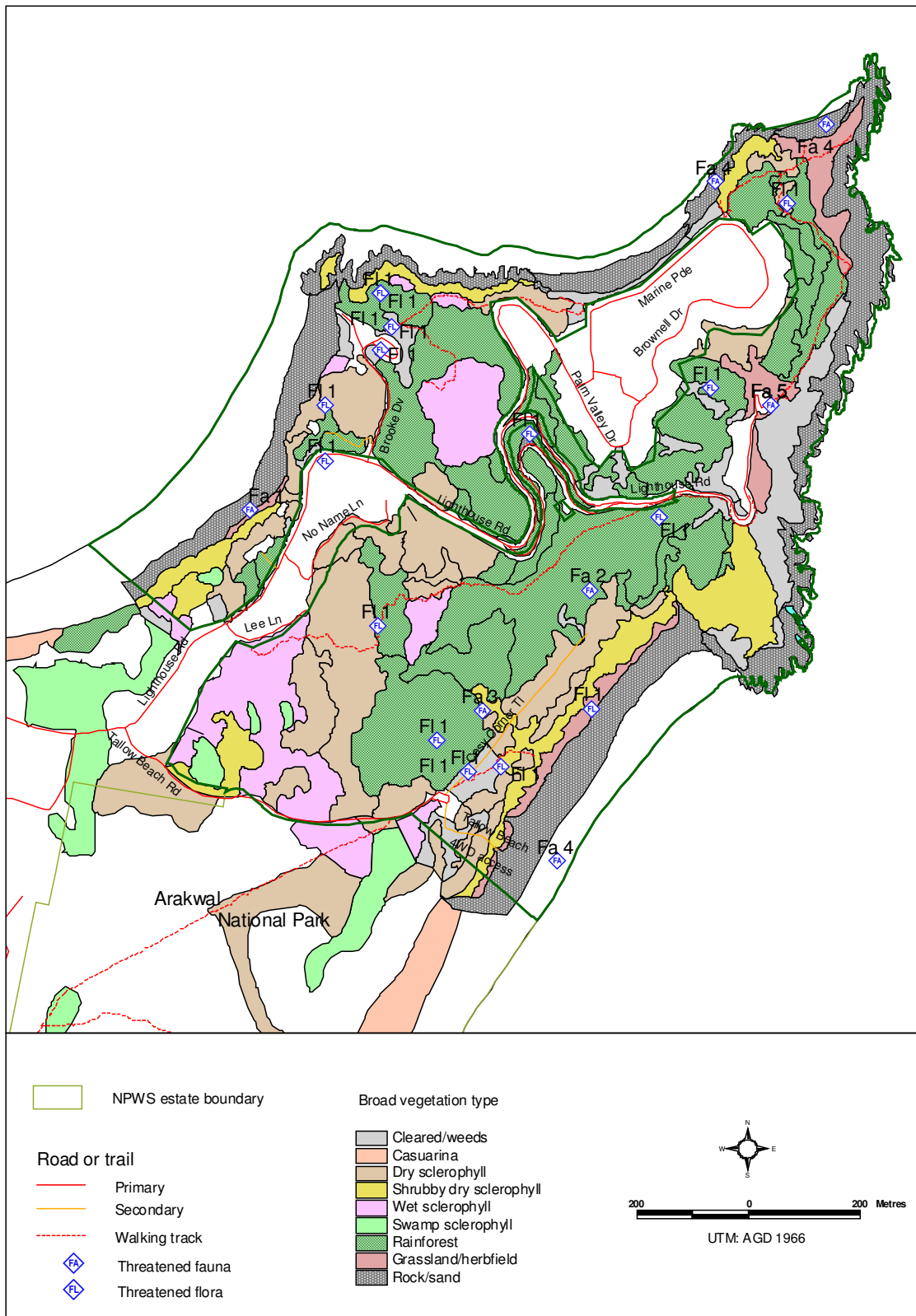
**Table 2. Locations within and around the Reserve where there is a Bushfire Risk to Cultural Heritage (Map 2).**

| Map ID. | Location                             |
|---------|--------------------------------------|
| HS1     | Cape Byron Lighthouse Precinct (T12) |
| A1      | Aboriginal Heritage Site             |
| A2      | Aboriginal Heritage Site             |

### 2.4. Natural Heritage

The inadequacy of known fire history for the Reserve and the extent of previous clearing and disturbance of vegetation on the Reserve does not allow for the identification of areas where known fire regime may be posing a risk to vegetation communities and biodiversity.

Map 3 identifies large areas on the Reserve where there is a risk to biodiversity from fire occurring. These areas are dominated by rainforest, palm forest and wet sclerophyll plant communities that are fire sensitive or fire intolerant, in varying stages of recovery from past disturbance and would be degraded by any significant fire occurrence in those communities.



**MAP 3. Vegetation communities and biodiversity at risk from fire on the Reserve**

## 3. BUSHFIRE RISK MANAGEMENT STRATEGIES

### 3.1. Introduction

The fire management tactics illustrated in Map 4 and described in the following sections have been designed to reduce the Bushfire Risk to assets within and adjacent to the Reserve (as identified in Section 2 of this plan). A Fire Management Works Schedule (listing which of the tactics listed in this plan will be implemented each year) will be prepared annually for the reserve.

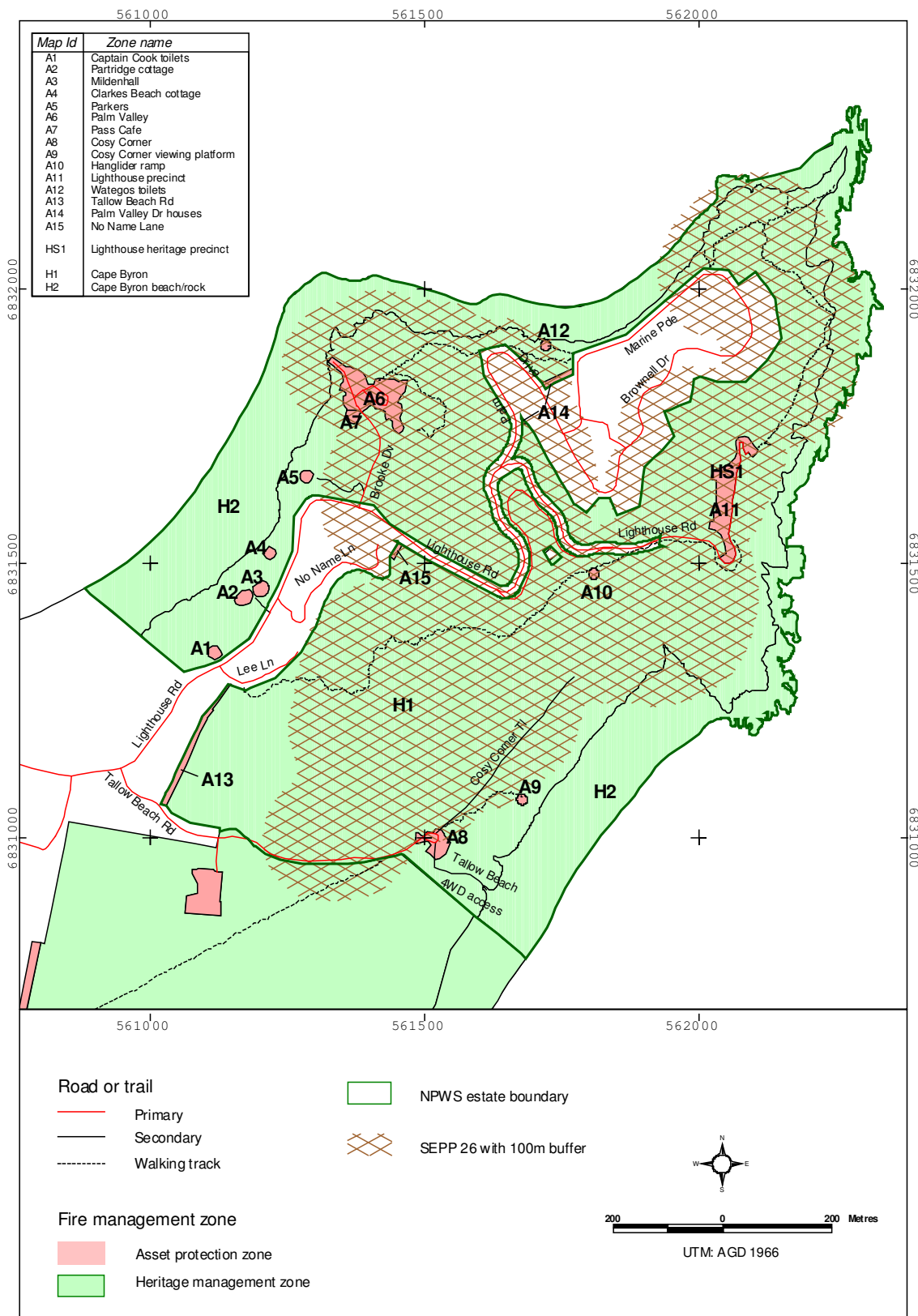
### 3.2. Fire Management Zones

The Reserve has been divided into Fire Management Zones according to the zoning system described in the Strategy for Fire Management (NPWS, 2003). Two zone types are identified: Asset Protection Zone and Heritage Management Zone. The plan recommends actions on a number of adjoining tenures. The actions identified for other land tenures are recommended only, however the NPWS/CBT will reference these to the Byron Bushfire Management Committee and pursue the implementation of these actions with neighbours.

#### 3.2.1. Asset Protection Zones

Fifteen (15) Asset Protection Zones have been identified within the Reserve (Map 2). The primary fire management objective in Asset Protection Zones is the protection of life and property (see Section 1.2) to be achieved by implementing the tactics prescribed in Table 3. A number of factors have been considered in developing the tactics for each asset protection zone. They include the site specific potential for fire to spread from the Reserve and impact adjoining assets, the vulnerability of adjoining assets and the impact on the environment.

- Where assets occur on properties that adjoin the Reserve a cooperative approach with adjoining landowners is required to ensure the establishment and maintenance of effective Asset Protection Zones. Private property adjoins the Reserve at Brownell Drive, Palm Valley Drive, Lighthouse Road, and the end of No Name Lane. It is recommended that part of allotments between buildings and adjoining bushland be maintained by landowners in accordance with any relevant Development Consent or Rural Fire Service recommendations.
- Byron Shire Council managed road reserve adjoins the Reserve along Lee Lane and No Name Lane. It is recommended that the road reserve between the edge of the bitumen road surface and the adjoining bushland be maintained by the landowner in accordance with Rural Fire Service recommendations.
- 66 hectares or 68% of the Reserve is mapped under State Environmental Planning Policy (SEPP) No. 26 – littoral rainforest (see Map 4). The policy applies to the core littoral rainforest and land within 100 metres of the mapped littoral rainforest (the buffer zone). The policy limits the type of activities that can be undertaken in the core area and buffer zone. Hazard reduction work associated with fire management strategies may require the preparation of an Environmental Impact Statement (EIS) or a Review of Environmental Factors (REF). Land to which SEPP 26 applies is excluded from the Bush Fire Environmental Assessment Code. Assets within the area mapped as SEPP 26 are not considered to be at high risk from fire. The tactics outlined for Asset Protection Zones located within the core littoral rainforest and buffer zone are generally limited to the removal of leaf litter and ground fuels.



Map 4. Fire Management Tactics to be applied in the Reserve

**Table 3. The specific fire management objectives and tactics to be applied in each Asset Protection Zone (Map 4).**

| Map ID. | Zone Name (APZ)      | Specific Objectives   | Tactics  | Responsibility  |
|---------|----------------------|---|--|---|
| A1      | Captain Cook Toilets | <ul style="list-style-type: none"> <li>To protect the toilet block from bushfire within the Reserve.</li> </ul>     | <p><i>The asset is located within an isolated area of vegetation and is not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>Establish and maintain a 5m wide APZ around the asset.</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Remove ground fuels and suspended fuels by raking, mowing, pruning and removal.</li> </ol>   | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| A2      | Partridge Cottage    | <ul style="list-style-type: none"> <li>To protect the cottage and shed from bushfire within the Reserve.</li> </ul> | <p><i>The asset is located within an isolated area of vegetation and is not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>Establish on leasehold 10m wide APZ on the hazard side of the development.</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Reduce ground fuels and suspended fuels to near nil available fuel by raking, mowing, pruning and leaf blowing.</li> <li>Remove or reuse (for soil stabilisation) material produced by hazard reduction.</li> <li>Remove sclerophyll trees and shrubs less than 3m in height</li> <li>Selectively remove, prune or limb sclerophyll trees to establish a discontinuous canopy such that tree crowns are separated by 2 – 5 metres gaps. NB. Removal/pruning will principally target fibrous and rough barked trees – refer to condition 3 below.</li> <li>Remove trees within 5m of buildings.</li> <li>Prune low branches of trees to 2m from the ground to prevent ground fire from spreading into trees.</li> </ol> <p><b>Conditions:</b></p> <ol style="list-style-type: none"> <li>Identify and retain any threatened species.</li> <li>Retain mesic trees and shrubs above 1.2m in height.</li> <li>Retain smooth barked trees in preference to fibrous barked trees.</li> <li>Retain large trees with hollows where possible – prune or limb if necessary.</li> <li>Utilise leaf blowers and hand removal of heavier fuels where above surface parts of ground orchids are observed.</li> <li>Retain native vegetation on slopes &gt;18.</li> </ol> <p>NOTE: The steep up-slope &gt;18 at the rear of the property is a constraint to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p> | <ul style="list-style-type: none"> <li>CBT</li> </ul> |

|           |                       |   |  |   |
|-----------|-----------------------|---|--|---|
| <b>A3</b> | Mildenhall Cottage    | <ul style="list-style-type: none"> <li>To protect the cottage from bushfire within the Reserve.</li> </ul>          | <p><i>The asset is located within an isolated area of vegetation and is not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>Establish a 10m wide APZ on hazard side of the development</b></p> <p><b>In priority order:</b></p> <ul style="list-style-type: none"> <li>As for A2 above</li> </ul> <p>NOTE: The steep up-slope &gt;18 at the rear of the property is a constraint to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p>   | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| <b>A4</b> | Clarkes Beach Cottage | <ul style="list-style-type: none"> <li>To protect the cottage from bushfire within the Reserve.</li> </ul>          | <p><i>The asset is located within an isolated area of vegetation and is not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>Establish a 10m wide APZ on hazard side of the development</b></p> <p><b>In priority order</b></p> <ul style="list-style-type: none"> <li>As for A2 above</li> </ul> <p>NOTE: The steep up-slope &gt;18 at the rear of the property is a constraint to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p>  | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| <b>A5</b> | Parkers Cottage       | <ul style="list-style-type: none"> <li>To protect the cottage and shed from bushfire within the Reserve.</li> </ul> | <p><i>The asset is located within an isolated area of vegetation and is not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>Establish a 10m wide APZ on the hazard side of the development.</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Reduce ground fuels and suspended fuels to near nil available fuel by raking, mowing, pruning and leaf blowing.</li> </ol> <p>NOTE: Steep slopes &gt;18° and presence of SEPP 26 Littoral Rainforest are constraints to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p> | <ul style="list-style-type: none"> <li>CBT</li> </ul> |

|                  |                                     |  |  |   |
|------------------|-------------------------------------|--|--|---|
| <p><b>A6</b></p> | <p>Palm Valley Picnic Area</p>      | <ul style="list-style-type: none"> <li>To protect the picnic day use area from bushfire within the Reserve.</li> </ul> | <p><i>Assets are located within an isolated area of vegetation and are not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>Establish and maintain a 5m wide APZ around assets</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Remove ground fuels and suspended fuels by raking, mowing, pruning and removal.</li> </ol> <p>NOTE: The presence of SEPP 26 Littoral Rainforest is a constraint to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p>  | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| <p><b>A7</b></p> | <p>Pass Café</p>                    | <p>To protect the Pass Café building from bushfire.</p>  | <p><b>Establish a 10m wide APZ on the hazard side of the development.</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Reduce ground fuels and suspended fuels to near nil available fuel by raking, mowing, pruning and leaf blowing.</li> <li>Remove or reuse (for soil stabilisation) material produced by hazard reduction.</li> </ol> <p><b>Conditions:</b></p> <ol style="list-style-type: none"> <li>Utilise leaf blowers and hand removal of heavier fuels where above surface parts of ground orchids are observed.</li> </ol> <p>NOTE: The presence of SEPP 26 Littoral Rainforest is a constraint to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p> | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| <p><b>A8</b></p> | <p>Cosy Corner (Tallow Beach)</p>   | <p>To protect the Tallow Beach/Cosy corner day use area from bushfire.</p>   | <p><b>Establish a 10m wide APZ around amenities building</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Remove ground fuels and suspended fuels by raking, mowing, pruning and removal.</li> </ol> <p>NOTE: The presence of SEPP 26 Littoral Rainforest is a constraint to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p>  | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| <p><b>A9</b></p> | <p>Cosy Corner viewing platform</p> | <ul style="list-style-type: none"> <li>To protect the Cosy Corner viewing platform from bushfire.</li> </ul>           | <p><b>Establish a 2m wide APZ around the lookout.</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Remove ground fuels and suspended fuels by raking, mowing, pruning and removal.</li> </ol>   | <ul style="list-style-type: none"> <li>CBT</li> </ul> |



|            |                                |   |   |   |
|------------|--------------------------------|---|---|---|
| <b>A10</b> | Hang Gliding Ramp              | <ul style="list-style-type: none"> <li>To protect the Tallow Ridge hang gliding ramp from bushfire.</li> </ul>  | <p><b>Establish and maintain a nil fuel protection area underneath the ramp</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Remove ground fuels and suspended fuels by raking, mowing, pruning and removal.</li> </ol> <p>NOTE: Steep slopes &gt;18° and presence of SEPP 26 Littoral Rainforest are constraints to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p>   | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| <b>A11</b> | Cape Byron Lighthouse Precinct | <ul style="list-style-type: none"> <li>To protect the buildings within the lighthouse precinct from bushfire in the Reserve and to provide a suitable refuge for visitors and staff unable to evacuate this precinct</li> </ul> | <p><b>Establish a 20m APZ on the hazard side of the buildings</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Reduce ground fuels and suspended fuels to near nil available fuel by raking, mowing, pruning and leaf blowing.</li> <li>Remove or reuse (for soil stabilisation) material produced by hazard reduction.</li> </ol> <p><b>Conditions:</b></p> <ol style="list-style-type: none"> <li>Utilise leaf blowers and hand removal of heavier fuels where above surface parts of ground orchids are observed.</li> </ol> <p>NOTE: Steep slopes &gt;18° and presence of SEPP 26 Littoral Rainforest are constraints to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p> | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
| <b>A12</b> | Wategos Toilets                | <ul style="list-style-type: none"> <li>To protect the Wategos Toilets from Bushfire</li> </ul>  | <p><i>The asset is located within an isolated area of vegetation and is not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>Establish and maintain a 5m wide APZ surrounding asset</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Remove ground fuels and suspended fuels by raking, mowing, pruning and removal.</li> </ol>  | <ul style="list-style-type: none"> <li>CBT</li> </ul> |

|                   |                        |  |  |   |
|-------------------|------------------------|--|--|---|
| <p><b>A13</b></p> | <p>Tallow Beach Rd</p> | <ul style="list-style-type: none"> <li>To protect properties on Lighthouse Rd between Tallow Beach Rd and Lee Lane from bushfire.</li> </ul> | <p><b>Establish on DEC (Trust managed) land 10-15m wide APZ from the rear boundary of private property.</b><br/> <b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Reduce ground fuels and suspended fuels to near nil available fuel by raking, mowing, pruning and leaf blowing.</li> <li>Remove or reuse (for soil stabilisation) material produced by hazard reduction.</li> <li>Remove sclerophyll trees and shrubs less than 3m in height</li> <li>Selectively remove, prune or limb sclerophyll trees to establish a discontinuous canopy such that tree crowns are separated by 2 – 5 metres gaps. NB. Removal/pruning will principally target fibrous and rough barked trees – refer to condition 3 below.</li> <li>Remove trees within 5m of buildings.</li> <li>Prune low branches of trees to 2m from the ground to prevent a ground fire from spreading into trees.</li> </ol> <p><b>Conditions:</b></p> <ol style="list-style-type: none"> <li>Identify and retain any threatened species</li> <li>Retain mesic trees and shrubs above 1.2m in height.</li> <li>Retain smooth barked trees in preference to fibrous barked trees.</li> <li>Retain large trees with hollows where possible – prune or limb if necessary.</li> <li>Utilise leaf blowers and hand removal of heavier fuels where above surface parts of ground orchids are observed.</li> <li>Retain native vegetation on slopes &gt;18.</li> <li>Prior and follow-up weed control to be undertaken in association with these works to minimise the potential spread of invasive weeds due to site disturbance.</li> </ol> | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
|-------------------|------------------------|--|--|---|

|                   |                                 |  |   |   |
|-------------------|---------------------------------|--|---|---|
| <p><b>A14</b></p> | <p>Palm Valley Drive Houses</p> | <ul style="list-style-type: none"> <li>To protect properties along Palm Valley Drive from Bushfire from the Reserve</li> </ul> | <p><b>No 1. Palm Valley Drive</b></p> <p><i>The asset is located within an isolated area of vegetation and is not considered to be within a significant bush fire hazard area. The APZ dimensions prescribed are in response to the reduced level of threat.</i></p> <p><b>No 8 Palm Valley Drive</b></p> <p><b>Establish on DEC (Trust managed) land 10 metre wide APZ from the boundary of private property.</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Reduce ground fuels and suspended fuels to near nil available fuel by raking, mowing, pruning and leaf blowing.</li> <li>Remove or reuse (for soil stabilisation) material produced by hazard reduction.</li> </ol> <p><b>Conditions:</b></p> <ol style="list-style-type: none"> <li>Utilise leaf blowers and hand removal of heavier fuels where above surface parts of ground orchids are observed.</li> </ol> <p>NOTE: Steep slopes &gt;18° and presence of SEPP 26 Littoral Rainforest adjacent to No 8 are constraints to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001).</p> | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
|-------------------|---------------------------------|--|---|---|

|                   |                         |   |  |   |
|-------------------|-------------------------|---|--|---|
| <p><b>A15</b></p> | <p>178 No Name Lane</p> | <ul style="list-style-type: none"> <li>To protect property at the end of No Name Lane (178 Lighthouse Rd) adjoining the Reserve from bushfire.</li> </ul> | <p><b>Establish on DEC (Trust managed) land 10-15m wide portion of the APZ from the boundary of private property.</b></p> <p><b>In priority order:</b></p> <ol style="list-style-type: none"> <li>Reduce ground fuels and suspended fuels to near nil available fuel by raking, mowing, pruning and leaf blowing.</li> <li>Remove or reuse (for soil stabilisation) material produced by hazard reduction.</li> <li>Remove sclerophyll trees and shrubs less than 3m in height</li> <li>Selectively remove, prune or limb sclerophyll trees to establish a discontinuous canopy such that tree crowns are separated by 2 – 5 metres gaps. NB. Removal/pruning will principally target fibrous and rough barked trees – refer to condition 3 below.</li> <li>Remove trees within 5m of buildings.</li> <li>Prune low branches of trees to 2 metres from the ground to prevent a ground fire from spreading into trees.</li> </ol> <p><b>Conditions:</b></p> <ol style="list-style-type: none"> <li>Identify and retain any threatened species</li> <li>Retain mesic trees and shrubs above 1.2m in height.</li> <li>Retain smooth barked trees in preference to fibrous barked trees.</li> <li>Retain large trees with hollows where possible – prune or limb if necessary.</li> <li>Utilise leaf blowers and hand removal of heavier fuels where above surface parts of ground orchids are observed.</li> <li>Retain native vegetation on slopes &gt;18.</li> </ol> <p>NOTE: Steep slopes &gt;18° are a constraint to establishing an APZ which complies with Planning for Bush Fire Protection (RFS 2001)</p> | <ul style="list-style-type: none"> <li>CBT</li> </ul> |
|-------------------|-------------------------|---|--|---|

### 3.2.2. Strategic Fire Management Zones

The primary fire management objective in Strategic Fire Management Zones (SFMZ) is to reduce fuel loads and therefore to reduce the intensity, rate of spread and spotting distance of bush fire burning in these zones. SFMZs are most commonly treated with relatively frequent prescribed burning to achieve the desired outcome. SFMZs provide a measure of control over the spread of bushfires that could otherwise result in inappropriate fire regimes or threats to life and property.

No Strategic Fire Management Zones have been proposed within the Reserve. The substantial area of rainforest within the Reserve provides significant strategic control advantage due to its low bushfire behaviour potential. The existing network of roads that dissect the Reserve provide further adequate control advantages.

### 3.2.3. Heritage Management Zones

Other than for the areas defined as Asset Protection Zones the remainder of the Reserve has been identified as Heritage Management Zone (Map 4). The primary fire management objectives in Heritage Management Zones are to prevent the extinction of all species which are known to occur naturally within the Reserve (conserve biodiversity) and to protect Aboriginal sites, Historic Heritage sites and other culturally significant features from fire (see Section 1.2). Except where noted otherwise, these objectives will be achieved by:

- suppressing bushfires and where necessary, conducting prescribed burns to maintain fire regimes within the biodiversity thresholds specified in Table 4, and
- implementing the threatened species and cultural heritage management guidelines specified in Tables 5 and 6 in locations where threatened species and cultural heritage sites are known or likely to occur.

**Table 4. Fire regime guidelines for plant communities. These guidelines define a domain of acceptable fire intervals consistent with the maintenance of existing plant communities. Fire regimes outside this domain are predicted to cause significant declines in species populations, particularly if they prevail over > 50% of the area of each plant community.**

| Plant Community             | Fire Regime Guidelines   |
|-----------------------------|--|
| Littoral rainforest         | No fire acceptable   |
| Wet Sclerophyll forest      | Decline expected if successive fires, of any intensity, occur less than 50 years apart. Decline predicted if no fire for more than 200 years.  |
| Dry Forest complex          | Decline expected if more than two successive fires occur at intervals of less than 5 years. Decline expected if there are no fires for more than 30 years. Decline expected if successive fires occur which totally scorch or consume the tree canopy. |
| Shrubland/heath complex     | Decline expected if more than two successive fires occur at intervals of less than 8 years. Decline expected if more than two successive fires occur at intervals of more than 15 years. Decline expected if no fire occurs for more than 30 years.    |
| Grassland/herbfield complex | Decline expected if more than two successive fires occur at intervals of less than 5 years. Decline expected if more than two successive fires occur at intervals of more than 15 years.   |

**Table 5. The threatened species management tactics to be applied in the Reserve (see Map 3).**

| Species Management Tactics   | Tactics Code          | Species   |
|--|-----------------------|---|
| <ul style="list-style-type: none"> <li>As far as possible, exclude all fire from locations where these species are known to occur.</li> <li>Avoid the use of earth moving machinery in locations where these species are known to occur.</li> <li>Avoid the use of retardant in locations where these species are known to occur.</li> </ul> | <b>Fl<sub>1</sub></b> | <i>Acronychia littoralis</i><br><i>Xylosma terra-reginae</i><br><i>Cryptocarya foetida</i><br><i>Drynaria rigidula</i><br><i>Archidendron hendersonii</i> |

**Fauna:**

| Species Management Tactics  | Tactics Code          | Species  |
|---|-----------------------|--|
| <ul style="list-style-type: none"> <li>Protect large and hollow bearing trees in locations where these species are known to occur.</li> </ul>   | <b>Fa<sub>1</sub></b> | <i>Pandion haliaetus</i><br>osprey   |
| <ul style="list-style-type: none"> <li>Avoid high intensity fires which consume tree canopies.</li> </ul>   | <b>Fa<sub>2</sub></b> | <i>Ptilinopus magnificus</i><br>wompoo fruit dove<br><i>Ptilinopus regina</i><br>rose-crowned fruit dove   |
| <ul style="list-style-type: none"> <li>Protect large and hollow bearing trees in locations where these species are known to occur.</li> <li>Avoid interfire intervals of &lt; 10 years in locations where these species are known to occur.</li> <li>Avoid high intensity fires that consume canopies and fallen logs in locations where these species are known to occur.</li> </ul> | <b>Fa<sub>3</sub></b> | <i>Miniopterus australis</i><br>little bent-wing bat<br><i>Miniopterus schreibersii</i><br>common bent-wing bat<br><i>Nyctophilus bifax</i><br>eastern long eared bat<br><i>Syconycteris australis</i><br>common blossom bat   |
| <ul style="list-style-type: none"> <li>Habitat unlikely to be effected by fire.</li> <li>Avoid the use of earth moving machinery in coastal habitats where these species are known to occur.</li> </ul>   | <b>Fa<sub>4</sub></b> | <i>Sterna albifrons</i><br>little tern<br><i>Sterna fuscata</i><br>sooty tern<br><i>Haematopus fuliginosus</i><br>sooty oystercatcher<br><i>Phaethon rubricauda</i><br>Red-tailed tropicbird<br><i>Caretta caretta</i><br>loggerhead turtle<br><i>Chelonia mydas</i><br>green turtle |
| <ul style="list-style-type: none"> <li>As far as possible, exclude all fire from wetland habitats where these species are known to occur.</li> <li>Avoid the use of earth moving machinery from wetland habitats where these species are known to occur.</li> <li>Avoid the use of retardant in wetland habitats where these species are known to occur.</li> </ul>                   | <b>Fa<sub>5</sub></b> | <i>Crinia tinnula</i><br>wallum froglet<br><i>Litoria olongburensis</i><br>Olongburra frog   |

**Table 6. The cultural heritage management tactics to be applied in the Reserve (see Map 3)**

| • Site Management Tactics  | • Tactics Code       | Site Types                          |
|--|----------------------|-------------------------------------|
| <ul style="list-style-type: none"> <li>As far as possible protect site from fire.</li> <li>Avoid all ground disturbances including the use of earthmoving machinery, handline construction and driving over sites.</li> <li>Avoid water bombing which may cause ground disturbance.</li> </ul> | <b>A<sub>1</sub></b> | Burials, artefact scatters, middens |
| <ul style="list-style-type: none"> <li>Maintain APZ</li> </ul>   | <b>H<sub>1</sub></b> | Lighthouse precinct                 |

### 3.3. Fire Management Trails and Roads

Access to and within the Reserve is provided mostly in the form of sealed roads maintained by Byron Shire Council and the Trust. There are two beach access points on the Reserve, one via a bitumen ramp located at The Pass and the second a sand 4WD track leading from the southeastern corner of the Tallow Beach carpark. All roads provide access for fire management. Keys are required to access both tracks.

The external sealed road system that dissects the Reserve services the residential areas that adjoin the Reserve at Wategos Beach and along Lighthouse Road. A 4WD track (Cosy Corner Trail) commencing from the Tallow Beach carpark services the water pipe that leads to the Tallow Ridge Reservoir.

There are currently no fire management trails located on the Reserve. There is no proposal to construct any fire management trails during the life of this strategy.

### 3.4. Other Fire Control Advantages

Other fire control advantages are features that may be used to support bushfire suppression operations. There are a number of features within and adjoining the Reserve that may provide assistance during fire events. These include roads, trails, watering points, fire retardant vegetation, beach access and cleared refuge areas such as the Reserve's carparks.

The watering point for vehicles on the Reserve is within the lighthouse precinct where three underground water tanks suitable for pump extraction are located. No other fire control advantages are proposed to be constructed during the life of this strategy.

### 3.5. Education, Cooperation and Enforcement

The Cape Byron Trust/DEC will undertake the following during the life of this strategy:

#### Education

- Coordinate opportunities such as workshops and meetings to interpret and promote, to neighbours and other stakeholders, the tactics proposed in this strategy.
- Support the Rural Fire Service and NSW Fire Brigades to promote appropriate preparation for bush fires and hazard reduction on adjoining properties and to promote appropriate responses by neighbours to bushfire or prescribed burning on the reserve.
- Erect signs at picnic areas and other access points to advise visitors of the actions and precautions they should undertake in the event of bushfire on the Reserve.

#### Cooperation

- Participate in the Byron Bush Fire Management Committee to develop operational plans to coordinate cooperative responses to bush fires.
- The Parks and Wildlife Division, with the assistance of NSW Fire Brigades and Rural Fire Service, will respond to bush fires on the Reserve.

#### Enforcement

- Investigate all fires and actively pursue legal action against those responsible for illegal ignitions where evidence permits.

### **3.6. Research and Monitoring**

During the life of this strategy the Cape Byron Trust will:

- In Asset Protection Zones, monitor the Overall Fuel Hazard to identify the need for fuel reduction.
- Establish sites in vegetation communities to monitor the effect of fire regimes on biodiversity.



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**PARKS AND  
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