



# TYPE 1 FIRE MANAGEMENT STRATEGY PELICAN ISLAND NATURE RESERVE

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



Department of  
**Environment and Conservation (NSW)**

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**TYPE 1  
FIRE MANAGEMENT STRATEGY  
for  
Pelican Island Nature Reserve**

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

This strategy has been endorsed by;

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Date approved: 16 June 2006

**Cover Photo:** Aerial photograph of Pelican Island. (GIS: Kariong\_air.sid.)

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Published by the National Parks and Wildlife Service, Central Coast Hunter Range Region.  
Contact: PO Box 1477, Gosford, NSW, 2250.

DEC 2006/145    ISBN 1 74137 880 X

## **Pelican Island Nature Reserve Type-1 Reserve Fire Management Strategy**

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### **1. Fire Management Principles**

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

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 Gosford Bush Fire Management Committee.

### **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.

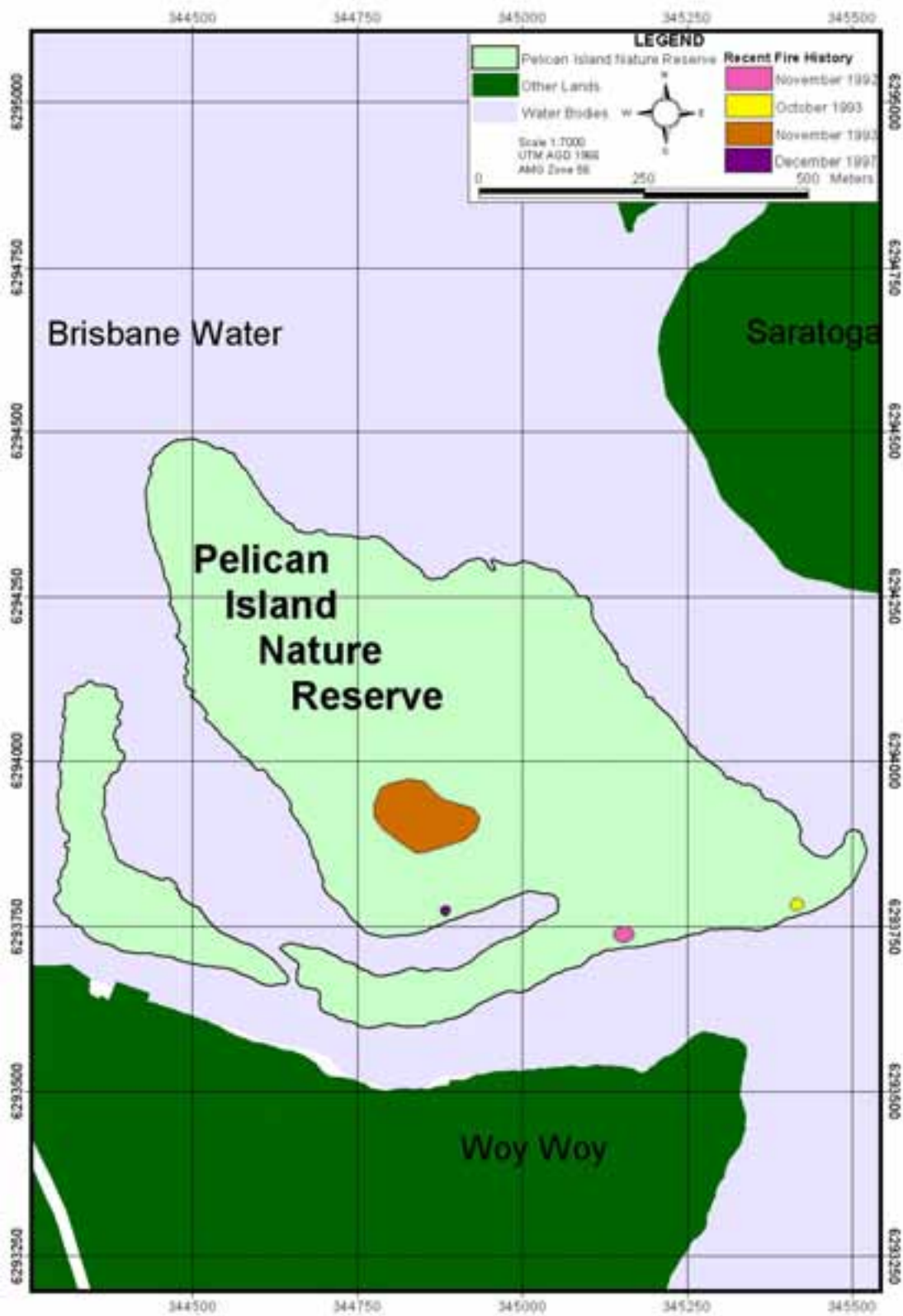
The maintenance of biodiversity to avoid the extinction of natural species, populations and communities within the landscape underpins fire management activities within the NPWS.

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



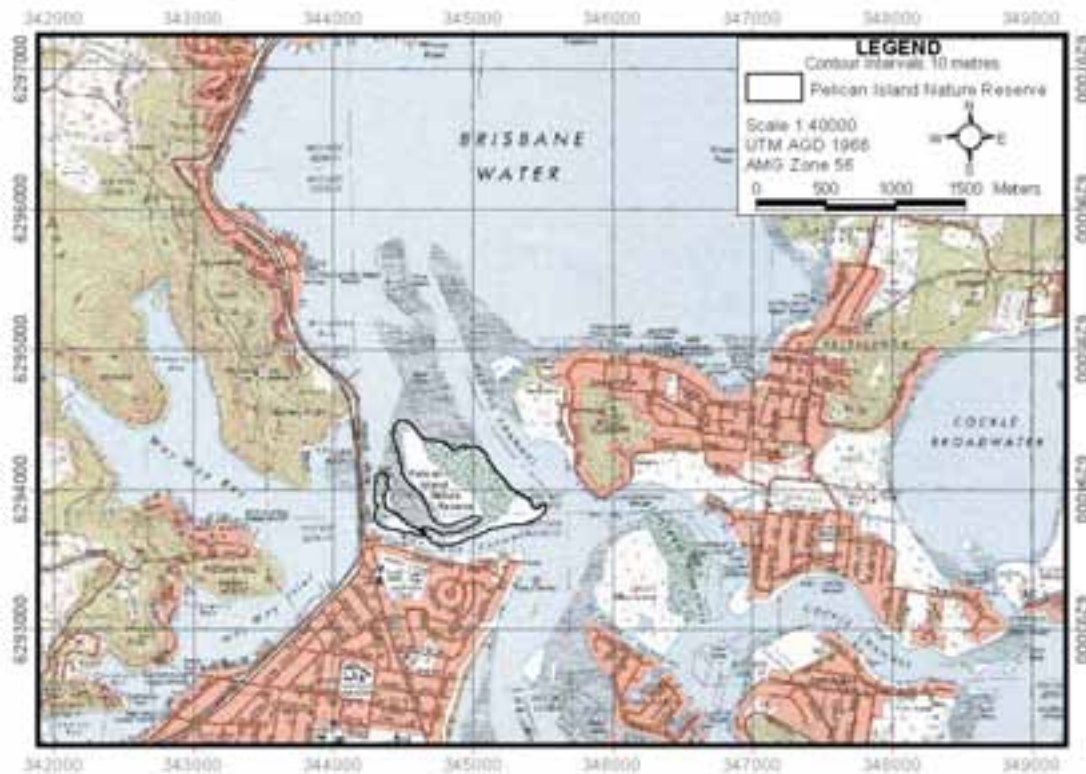
**Figure 1:** Recent Fire History for Pelican Island Nature Reserve.

The fire history for Pelican Island Nature Reserve is displayed in Figure 1. The majority of the reserve has no record of fire as far back as 1964. However, small wildfires have affected minor pockets of the southern half of the reserve. November 1992 saw a very small area burn due to unknown causes. An even smaller pocket was burnt by wildfire in October 1993 as the result of an unattended campfire. Just one month later (November 1993) another wildfire was started as a consequence of arson. This wildfire burnt over a hectare on Pelican Island Nature Reserve. The last record of fire on Pelican Island Nature Reserve is from December 1997, again the result of arson. However, this fire was also very small in size. No prescribed burns have been undertaken in the reserve.

Pelican Island 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 adjacent to any built assets, which would be exposed to a high level of bushfire risk. 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.

### 3.2 Topography

Pelican Island Nature Reserve (approximately 50 ha) is situated north of Woy Woy and west of Saratoga, in Brisbane Water. The island is mainly flat and surrounded by Brisbane Water. There is minimal chance of fire impacting adjoining properties.



**Figure 2:** Location of Pelican Island Nature Reserve.

### 3.3 Vegetation

Pelican Island Nature Reserve is largely comprised of mangrove vegetation with some Swamp Oak and Saltmarsh areas. The entire island is classified as Swamp Oak Mangrove comprising of Estuarine Mangrove Scrub, Estuarine Saltmarsh/Grassland, Estuarine Swamp Oak Forest and Disturbed Vegetation (canopy only). Such vegetative communities generally restrict the spread of fires under non-drought conditions.

Estuarine Mangrove Scrub is present on the majority of the island containing mostly *Avicennia marina* subsp. *australasica*, together with *Aegiceras corniculatum*. A small pocket on the western side of the reserve contains Estuarine Swamp Oak Forest, comprising mainly of Swamp Oak (*Casuarina glauca*), with an understorey of sedges and rushes such as *Juncus kraussii* subsp. *australiensis* and *Baumea juncea*, and the herb *Apium prostratum*. Estuarine Saltmarsh/Grassland, consisting primarily of *Sarcocornia quinqueflora* subsp. *quinqueflora*, *Samolus repens* and *Suaeda australis* in saltmarsh, and *Zoysia macrantha* and *Sporobolus virginicus* in grasslands, is also present on Pelican Island Nature Reserve. State Environmental Planning Policies (SEPPs) do not apply to land dedicated or reserved under the NP&W Act, however, being a coastal wetland, much of Pelican Island falls under the category consistent with SEPP 14. The Service has adopted a process of environmental assessment consistent with the principles for these policies.

There are no recorded rare or threatened floristic species within Pelican Island Nature Reserve.

### 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.

### 3.5 Built assets vulnerable to fire

There are no contemporary built assets within Pelican Island Nature Reserve. Any built assets on land near the reserve are separated by Brisbane Water, which limits the spread of fires from or to adjacent properties.

### 3.6 Natural assets vulnerable to fire

Pelican Island Nature Reserve was created in 1989 in an attempt to conserve the native plant and animal communities. Vegetation communities present in Pelican Island Nature Reserve have variable fire interval guidelines presented in Table 1. A range of fire intervals, intensities and timing (season) is recommended for all vegetation communities within the known range. Fire should not exceed more than 30% of the zone at any one time where practicable, in order to maintain a mosaic of age classes. Crown fires should be avoided at the lower end of interval ranges and fire regimes should be 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.

**Table 1.** Fire Interval Guidelines for the Protection of Vegetation Communities within Pelican Island Nature Reserve.

Vegetation Community	Minimum Interval	Maximum Interval
Estuarine Mangrove Scrub	Avoid Fire	n/a
Estuarine Saltmarsh / Grassland	Avoid Fire	n/a
Estuarine Swamp Oak Forest	7	35

Source: Bradstock, *et al* (2003).

The range in vegetation communities occurring within the reserve provides a diversity of habitats for native fauna. Estuarine habitats (saltmarsh and mangrove) for example, are considered to be of high conservation value because they contain many structural and compositional attributes that provide important fauna habitat, especially for wetland birds. There are seven recorded threatened fauna species that are known to occur on Pelican Island Nature Reserve, listed in Table 2.

**Table 2:** Threatened fauna known to occur within Pelican Island Nature Reserve

Species known to occur within the reserve		
Common Name	Scientific Name	Status*
Little Bent-wing Bat	<i>Miniopterus australis</i>	Vulnerable
Common Bent-wing Bat	<i>Miniopterus schreibersii</i>	Vulnerable
Eastern Freetail Bat	<i>Mormopterus norfolkensis</i>	Vulnerable
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	Vulnerable
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	Vulnerable
Pied Oystercatcher	<i>Haematopus longirostris</i>	Vulnerable
Bush Stone-curlew	<i>Burhinus grallarius</i>	#Endangered

Sources: NPWS fauna modelling database 1999, NPWS Atlas 2005, NPWS 1999.

Robert Payne, 2006, *Small Mammal and Microbat Survey for Rileys Island and Pelican Island Brisbane Water*, Reporting to NPWS.

Notes: \* Denotes status under the NSW TSC Act.

# Denotes species also listed as threatened under the Commonwealth EPBC Act.

Although there are records of various bird or bat species that occur on Pelican Island Nature Reserve, little is known about other animals. Comprehensive flora and fauna surveys have not been undertaken within the reserve. Further surveys are required to identify other threatened species or communities on the island.

The reserve's (biological) isolation by water means that populations of plants and animals dependent on migration for recruitment following fire are particularly vulnerable to adverse impacts of large uncontrolled fire.

### 3.7 Cultural Heritage values vulnerable to fire

An abundance of natural resources from both the inland and the coast allowed Aboriginal people to live in the region for thousands of years. No Aboriginal cultural heritage survey work has been undertaken within Pelican Island Nature Reserve. Although Aboriginal sites have not been recorded within Pelican Island Nature Reserve to date, several sites including shell middens and earth mounds at Koolewong have been recorded in close proximity on surrounding lands. No cultural heritage surveys have been carried out in the reserve to date. No sites of historical significance are known to exist within Pelican Island Nature Reserve.

### 3.8 Bushfire risk

Brisbane Water separates Pelican Island from adjacent properties, limiting the likelihood of fires within the reserve threatening neighbouring assets. The topography and vegetative structure (saline wetland) of Pelican Island Nature Reserve has resulted in a low bushfire risk.

## 4. Fire Management Strategy

**Table 3: Fire Management Strategies for Pelican Island Nature Reserve.**

ISSUE	OBJECTIVE(S)	STRATEGIES
<b>Land Management Zone</b>	<ul style="list-style-type: none"> <li>▪ To prevent the extinction of all species that are known to occur naturally within the reserves (conserve biodiversity).</li> </ul>	<ul style="list-style-type: none"> <li>➤ As far as possible maintain fire regimes within specified intervals.</li> <li>➤ Suppression or containment of fires inconsistent with the fire regime prescription.</li> <li>➤ As far as possible implement specified threatened species management guidelines.</li> <li>➤ As far as possible implement cultural heritage management guidelines.</li> </ul>
<b>Fire thresholds for vegetative communities</b>	<ul style="list-style-type: none"> <li>▪ Vegetative communities managed within desired fire thresholds</li> </ul>	<ul style="list-style-type: none"> <li>➤ Keep fire interval for vegetative communities within recognised appropriate fire regimes.</li> <li>➤ Maintain a mosaic of fire regimes within zone in order to create a diversity of habitat age classes.</li> </ul>
<b>Containment Lines</b>	<ul style="list-style-type: none"> <li>▪ Containment Line Construction</li> </ul>	<ul style="list-style-type: none"> <li>➤ Use existing features where possible.</li> </ul>
<b>Backburning</b>	<ul style="list-style-type: none"> <li>▪ Appropriate use when required</li> </ul>	<ul style="list-style-type: none"> <li>➤ As far as possible, backburning should take into account threatened species and cultural heritage guidelines.</li> <li>➤ Backburning may be safely undertaken during the day when the fire danger is &lt; High.</li> <li>➤ On days when the fire danger &gt; High, as far as possible, delay backburning until late afternoon – early evening when the temperature is decreasing and humidity increasing.</li> </ul>
<b>Peat Fires</b>	<ul style="list-style-type: none"> <li>▪ To avoid reignition of underground fire.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monitoring for fire burning in peat layers is required.</li> <li>➤ Handtool trenches may need to be dug and flooded to contain peat fire.</li> </ul>



ISSUE (continued)	OBJECTIVE(S) (continued)	STRATEGIES (continued)
<b>Aerial Water Bombing</b>	<ul style="list-style-type: none"> <li>▪ Early suppression of fire to avoid adverse fire regimes</li> </ul>	<ul style="list-style-type: none"> <li>➤ Water bombing aircraft can be used to support fire suppression operations.</li> <li>➤ Early consideration should be given due to the difficult access to this site.</li> <li>➤ Salt water may be used for bombing - Brisbane Water and ocean are sources.</li> <li>➤ Foam is not to be used.</li> </ul>
<b>SEPP 14 Coastal Wetlands</b>	<ul style="list-style-type: none"> <li>▪ Estuarine saltmarsh and mangrove communities adequately protected</li> </ul>	<ul style="list-style-type: none"> <li>➤ Fires should be avoided.</li> <li>➤ Avoid the use of retardants and foams in locations where this community occurs.</li> <li>➤ Comply with the principles of State Environmental Planning Policy (SEPP) 14 Coastal Wetlands.</li> </ul>
<b>Threatened Fauna</b>	<ul style="list-style-type: none"> <li>▪ Threatened fauna adequately protected</li> </ul>	<ul style="list-style-type: none"> <li>➤ Avoid high frequency fire, smoke or machinery around known sites, and habitats, and avoid all fire within fire sensitive communities.</li> <li>➤ Maintain fire regimes that maintain floristic and structural diversity.</li> </ul>
	<ul style="list-style-type: none"> <li>- Little Bent-wing Bat (<i>Miniopterus australis</i>)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No fire, machinery around known roost sites and maternity caves (utilised between spring and March).</li> <li>➤ Utilise mosaic burn in foraging habitat.</li> </ul>
	<ul style="list-style-type: none"> <li>- Common Bent-wing Bat (<i>Miniopterus schreibersii</i>)</li> </ul>	<ul style="list-style-type: none"> <li>➤ No fire, machinery around known roost sites and maternity caves (utilised between spring and March).</li> <li>➤ Utilise mosaic burn in foraging habitat.</li> </ul>
	<ul style="list-style-type: none"> <li>- Eastern Freetail Bat (<i>Mormopterus norfolkensis</i>)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Protect hollow bearing trees (live and dead ones) and large mature trees which will provide future hollows, especially during the breeding season.</li> <li>➤ Avoid disturbance and fire around known roost sites (culverts/trees), where possible check culverts before fire operations.</li> </ul>

ISSUE (continued)	OBJECTIVE(S) (continued)	STRATEGIES (continued)
<b>Threatened Fauna (continued)</b>	- Yellow-bellied Sheath-tail-bat ( <i>Saccolaimus flaviventris</i> )	<ul style="list-style-type: none"> <li>➤ Protect hollow bearing trees (live and dead ones) and large mature trees which will provide future hollows, especially during the breeding season (December to March).</li> <li>➤ Avoid disturbance and fire around known roost sites (culverts/trees), where possible check culverts before fire operations.</li> </ul>
	- Greater Broad-nosed Bat ( <i>Scoteanax rueppellii</i> )	<ul style="list-style-type: none"> <li>➤ Adults likely to escape fire.</li> <li>➤ Avoid fire during breeding season. Avoid fire management activities within close proximity (&lt;100m) to known roosting sites.</li> <li>➤ Potential for moderate to high intensity fires, near maternity sites to impact on breeding success. Fire should be low intensity to preserve roost sites.</li> <li>➤ Maintain a mosaic of age classes within habitat to encourage prey diversity and tree hollow regeneration.</li> <li>➤ Avoid felling of known / potential roost trees during mop up operations.</li> </ul>
	- Pied oystercatcher ( <i>Haematopus longirostris</i> )	<ul style="list-style-type: none"> <li>➤ Avoid machinery around nest sites (saltmarsh, grassy areas) during breeding season (August-January).</li> <li>➤ Habitat unlikely to be affected by fire.</li> </ul>
	- Bush stone-curlew ( <i>Burhinus grallarius</i> )	<ul style="list-style-type: none"> <li>➤ No slashing, trittering or tree removal.</li> <li>➤ Utilise mosaic burn; avoid fires in the breeding period (Spring) in known habitat.</li> </ul>

## 5. Fire Management Map

Fire control advantages are features that may be used to support bushfire suppression operations in and around Pelican Island Nature Reserve. These include trails, walking tracks and water points (helicopter) as displayed in Figure 3. Assets in and around Pelican Island Nature Reserve such as SEPP 14 Wetlands, Threatened Fauna and Aboriginal Sites/Artefacts are also presented in Figure 3.

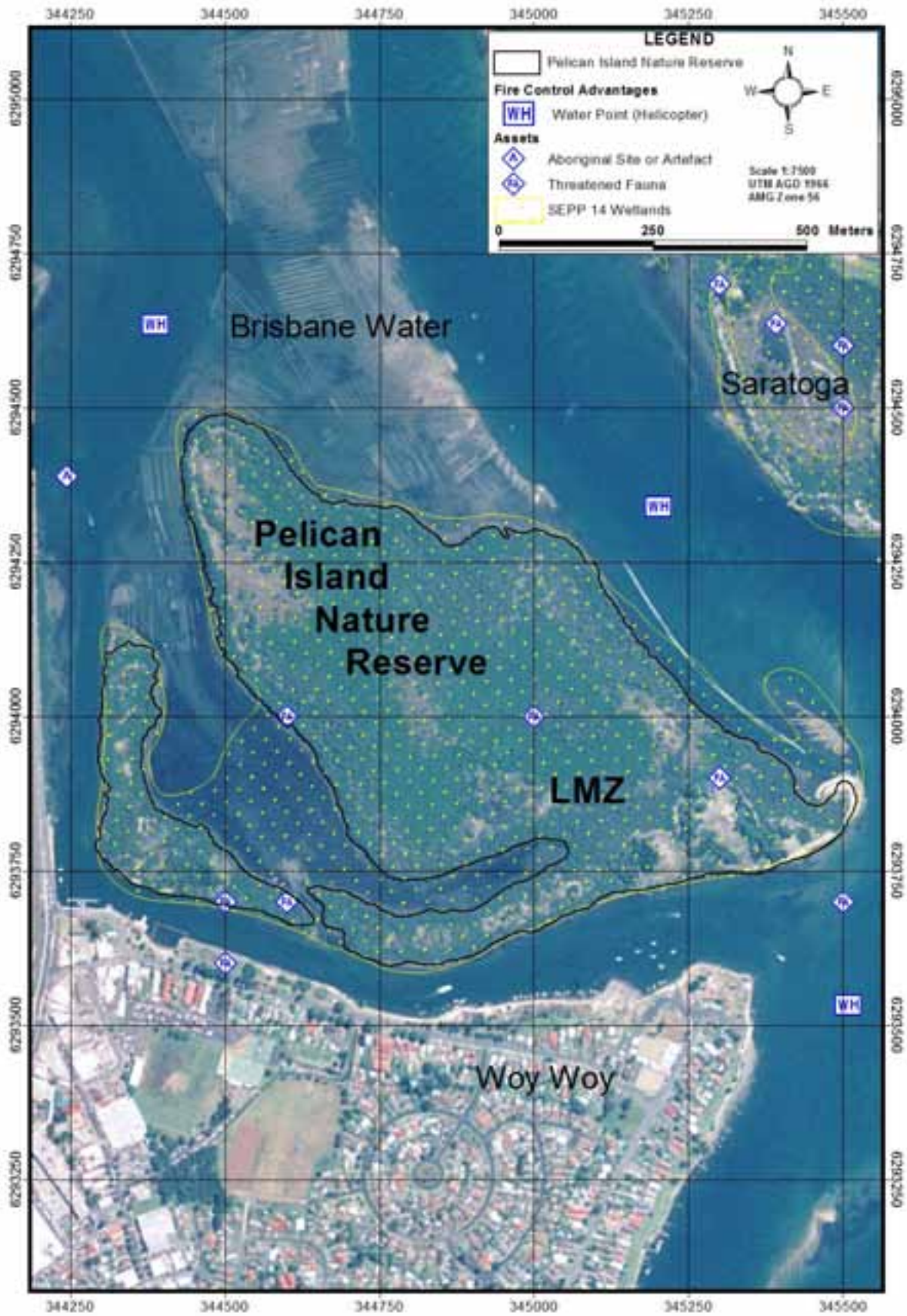


Figure 3: Fire Management map for Pelican Island Nature Reserve.