



TYPE 1 FIRE MANAGEMENT STRATEGY RILEYS 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
Rileys Island Nature Reserve**

For additional information or enquires on the management of fire in Rileys 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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Rileys Island Nature Reserve Type-1 Fire Management Strategy

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

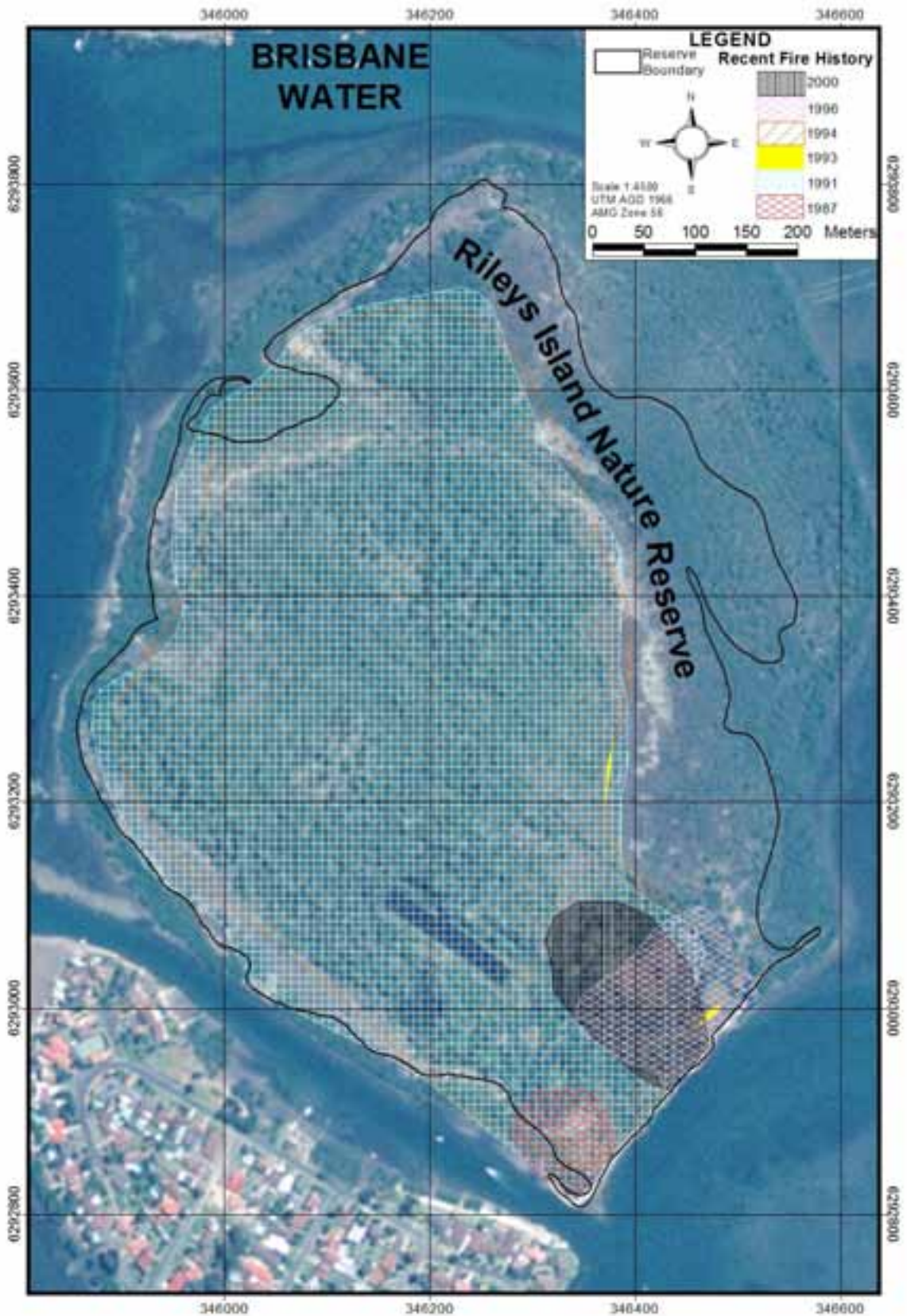


Figure 1: Recent Fire History for Rileys Island Nature Reserve.

Note: There are some inaccuracies in historical fire boundaries.

The fire history for Rileys Island Nature Reserve is displayed in Figure 1. The most southern portion of Rileys Island Nature Reserve had a small wildfire in January 1987. In September 1991 however, arson was the cause of a wildfire that covered the majority of the reserve. Similarly, in August 1993, arson resulted in small pockets of the reserve being burnt. This was followed by a larger wildfire in the Summer of 1994, which covered a similar area to the 1991 wildfire. Another small wildfire broke out in April of 1996 due to arson, and again in February 2000. The eastern extent of the reserve has no record of fire as far back as 1964. No prescribed burns have been undertaken in the reserve.

Rileys 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

Rileys Island Nature Reserve (approximately 46 ha) is situated nearby Woy Woy, south of Mt Pleasant, Saratoga and north of St Huberts Island, in Brisbane Water. The reserve is mainly flat, and is surrounded by Brisbane Water. There is minimal chance of fire impacting adjoining properties.

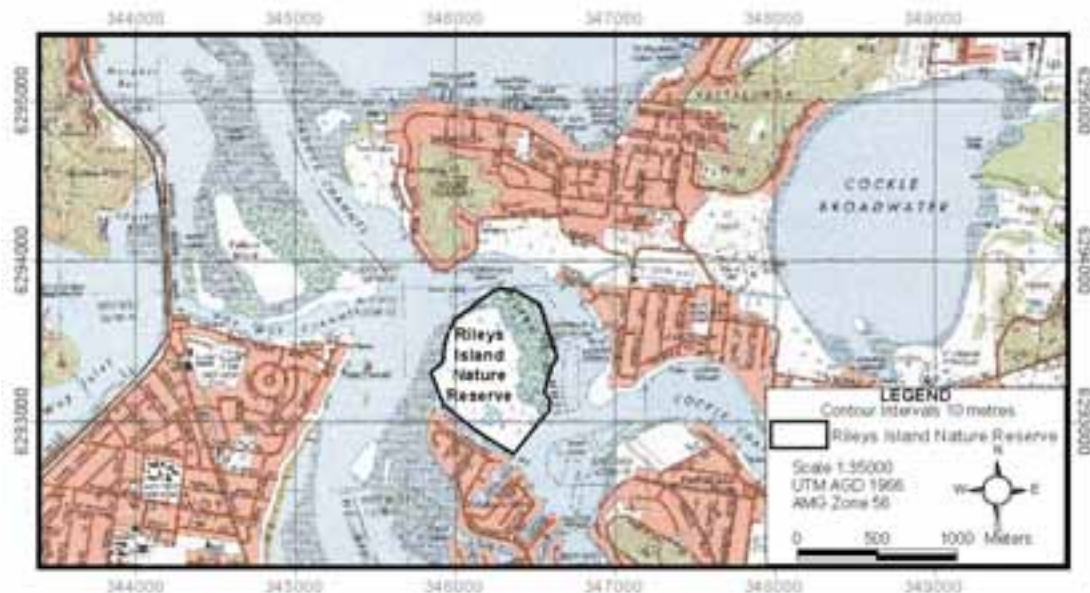


Figure 2: Location of Rileys Island Nature Reserve.

3.3 Vegetation

Rileys Island Nature Reserve contains mostly saltmarsh, swamp oak and a fringing mangrove community. The entire island is classified as estuarine wetland comprising of Estuarine Mangrove Scrub, Estuarine Saltmarsh/Grassland, Estuarine Swamp Oak Forest and Swamp Mahogany - Paperbark Forest. Such vegetative communities generally restrict the spread of fires under non-drought conditions.

Approximately half the island is covered in 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*. Swamp Mahogany – Paperbark Forest (*Eucalyptus robusta*) also occurs on Rileys Island Nature Reserve. 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 dominates the remaining bulk of the island. 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 Rileys 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. Estuarine Mangrove Scrub is present on the remainder of the island containing mostly *Avicennia marina subsp. australasica*, together with *Aegiceras corniculatum*.

There are no recorded rare or threatened floristic species within Rileys 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 Rileys 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

Rileys Island Nature Reserve was created in 1989 in an attempt to conserve the native plant and animal communities. 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. Vegetation communities present in Rileys Island Nature Reserve have variable fire interval guidelines presented in Table 1.

Table 1. Fire Interval Guidelines for Protection of Vegetation Communities.

Vegetation Community	Minimum Interval	Maximum Interval
Estuarine Mangrove Scrub	Avoid Fire	n/a
Estuarine Saltmarsh / Grassland	Avoid Fire	n/a
Swamp Mahogany – Paperbark Forest	7	35
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. Swamp Mahogany provides an important food source for local fauna during the winter months, and therefore must also be adequately protected from large uncontrolled fires. There are nine recorded threatened fauna species that are known to occur on Rileys Island Nature Reserve, listed in Table 2.

Table 2: Threatened fauna known to occur within Rileys 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
Terek Sandpiper	<i>Xenus cinereus</i>	Vulnerable
Pied Oystercatcher	<i>Haematopus longirostris</i>	Vulnerable
Bush Stone-curlew	<i>Burhinus grallarius</i>	#Endangered
Osprey	<i>Pandion halieatus</i>	Vulnerable

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 and bat species that occur on Rileys 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 Rileys Island Nature Reserve. Although Aboriginal sites have not been recorded within the reserve to date, several sites including shell middens, art sites and open campsites have been recorded in close proximity on surrounding lands.

The ruins of an old dwelling and ship building site are located on the southern end of the island. The ruins would not be affected by fire.

3.8 Bushfire risk

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

4. Fire Management Strategy

Table 3: Fire Management Strategies for Rileys Island Nature Reserve.

ISSUE	OBJECTIVE(S)	STRATEGIES
Land Management Zone	<ul style="list-style-type: none"> ▪ To prevent the extinction of all species that are known to occur naturally within the reserves (conserve biodiversity). 	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ▪ Vegetative communities managed within desired fire thresholds 	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ▪ Containment Line Construction 	<ul style="list-style-type: none"> ➤ Use existing features where possible.
Backburning	<ul style="list-style-type: none"> ▪ Appropriate use when required 	<ul style="list-style-type: none"> ➤ 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.

ISSUE (continued)	OBJECTIVE(S) (continued)	STRATEGIES (continued)
Peat Fires	<ul style="list-style-type: none"> ▪ To avoid reignition of underground fire 	<ul style="list-style-type: none"> ➤ Monitoring for fire burning in peat layers is required. ➤ Hand tool trenches may need to be dug and flooded to contain peat fire.
Aerial Water Bombing	<ul style="list-style-type: none"> ▪ Early Suppression of fire to avoid adverse fire regimes 	<ul style="list-style-type: none"> ➤ Water bombing aircraft can be used to support fire suppression operations. ➤ Early consideration should be given due to the difficult access to this site ➤ Salt water may be used for bombing - Brisbane Water and ocean are sources ➤ Foam is not be used.
SEPP 14 Coastal Wetlands	<ul style="list-style-type: none"> ▪ Estuarine saltmarsh and mangrove communities adequately protected 	<ul style="list-style-type: none"> ➤ Fires should be avoided. ➤ Avoid the use of retardants and foams in locations where this community occurs. ➤ Avoid the use of earth moving machinery in known locations. ➤ Comply with the principles of State Environmental Planning Policy (SEPP) 14 Coastal Wetlands.
Threatened Fauna	<ul style="list-style-type: none"> ▪ Threatened fauna adequately protected 	<ul style="list-style-type: none"> ➤ 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.
	<ul style="list-style-type: none"> - Bush stone-curlew (<i>Burhinus grallarius</i>) 	<ul style="list-style-type: none"> ➤ No slashing, trittering or tree removal. ➤ Utilise mosaic burn; avoid fires in the breeding period (Spring) in known habitat.
	<ul style="list-style-type: none"> - Terek sandpiper (<i>Xenus cinereus</i>) 	<ul style="list-style-type: none"> ➤ Avoid high intensity fires, smoke and machinery within known and potential habitat. ➤ Habitat unlikely to be affected by fire.

ISSUE (continued)	OBJECTIVE(S) (continued)	STRATEGIES (continued)
Threatened Fauna (continued)	- Pied oystercatcher (<i>Haematopus longirostris</i>)	<ul style="list-style-type: none"> ➤ Avoid machinery around nest sites (saltmarsh, grassy areas) during breeding season (August-January). ➤ Habitat unlikely to be affected by fire.
	- Osprey (<i>Pandion halieatus</i>)	<ul style="list-style-type: none"> ➤ Fire unlikely to impact individuals or habitat. ➤ Avoid high intensity fires within potential habitat and known nesting sites, especially during the breeding season. ➤ As far as possible, protect large and hollow trees in locations where these species are known to occur.
	- Little Bent-wing Bat (<i>Miniopterus australis</i>)	<ul style="list-style-type: none"> ➤ No fire, machinery around known roost sites and maternity caves (utilised between spring and March). ➤ Utilise mosaic burn in foraging habitat.
	- Common Bent-wing Bat (<i>Miniopterus schreibersii</i>)	<ul style="list-style-type: none"> ➤ No fire, machinery around known roost sites and maternity caves (utilised between spring and March). ➤ Utilise mosaic burn in foraging habitat.
	- Eastern Freetail Bat (<i>Mormopterus norfolkensis</i>)	<ul style="list-style-type: none"> ➤ Protect hollow bearing trees (live and dead ones) and large mature trees which will provide future hollows, especially during the breeding season. ➤ Avoid disturbance and fire around known roost sites (culverts/trees), where possible check culverts before fire operations.

ISSUE (continued)	OBJECTIVE(S) (continued)	STRATEGIES (continued)
Threatened Fauna (continued)	- Yellow-bellied Sheath-tail-bat (<i>Saccolaimus flaviventris</i>)	<ul style="list-style-type: none"> ➤ 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). ➤ Avoid disturbance and fire around known roost sites (culverts/trees), where possible check culverts before fire operations.
	- Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>)	<ul style="list-style-type: none"> ➤ Adults likely to escape fire. ➤ Avoid fire during breeding season. ➤ Potential for moderate to high intensity fires, near maternity sites to impact on breeding success. Fire should be low intensity for preservation of roost sites. ➤ Avoid fire management activities within close proximity (<100m) to known roosting sites. ➤ Maintain a mosaic of age classes within habitat to encourage prey diversity and tree hollow regeneration. ➤ Avoid felling of known / potential roost trees during mop up operations.

5. Fire Management Map

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

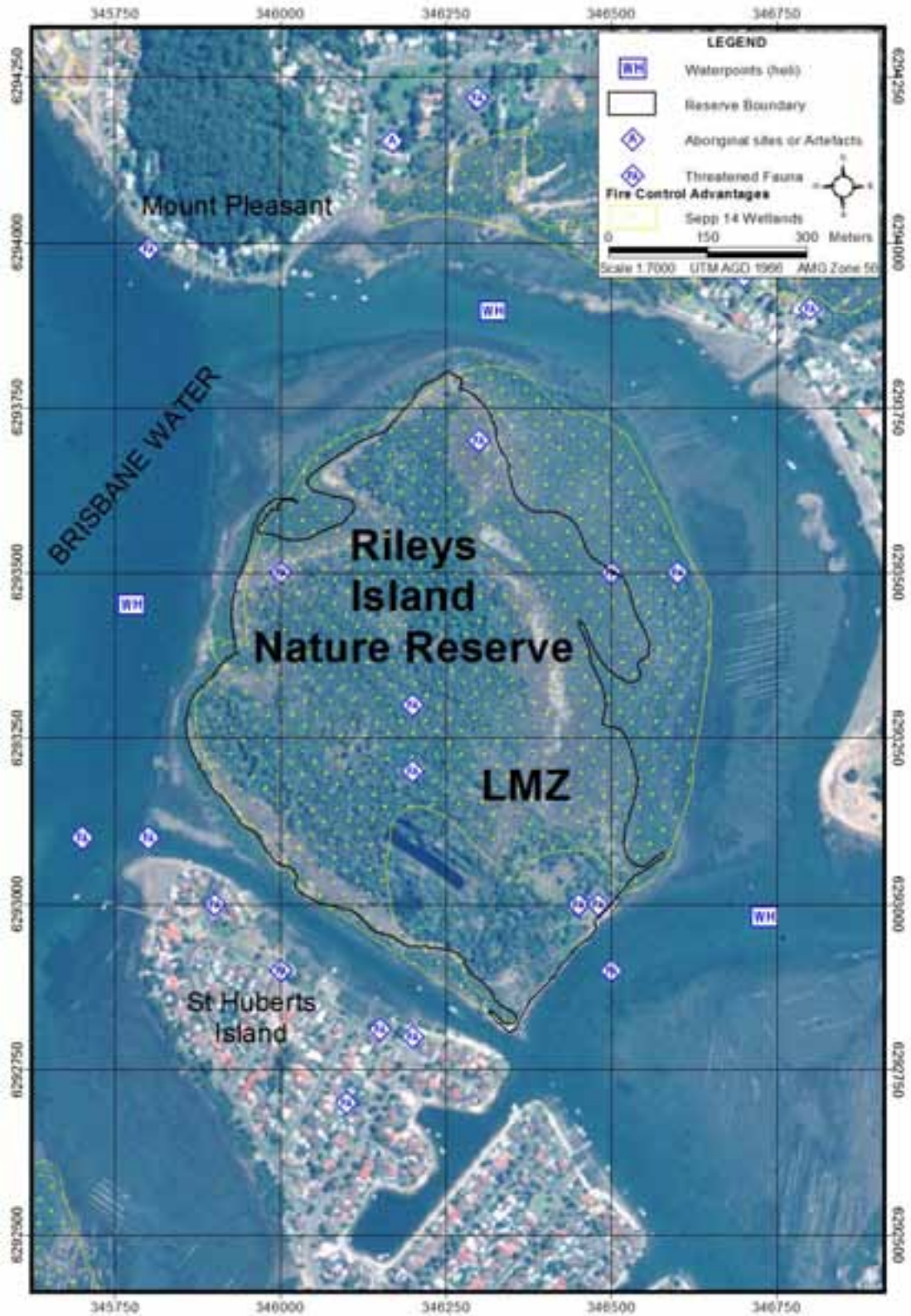


Figure 3: Fire Management map for Rileys Island Nature Reserve.