

Clarence City Council

Bushfire Management Plan

Mortimer Bay Coastal Reserve
Sandford

Revised
January 2017
Clarence City Council

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1. Introduction

This Bushfire Management Plan (BMP) is a revision and expansion of the previous BMP for Mortimer Bay Coastal Reserve prepared by AVK Environmental Management and North Barker Ecosystem Services and will operate for a period of 5 years after which another review is recommended.

It should be noted that this BMP is not an operations plan and does not deal directly with “response” to bushfires. Operational procedures are dealt with in various documents prepared by the Tasmania Fire Service (TFS) and other emergency services.

1.1 Aim

The aim of this BMP is to provide a framework for bushfire management that meets Clarence City Council’s land management objectives for the site, as set out in Council’s *Bushfire Management Strategy for Council Owned and Controlled Land*, *Bushfire Management Strategy Best Management Practice Guidelines* and Strategic Plan.

It must be noted that it will not be possible to prevent bushfires occurring in the reserve. Unless these fires are suppressed quickly, there is a risk that large destructive fires may develop. Depending on weather conditions, such fires may burn a substantial portion of the bushland in and adjoining the reserve causing damage to assets and environmental values, and even loss of life. This BMP aims to lessen these risks by minimising the risk of fires starting in the reserve, and minimising the risk of injury or damage to assets in and surrounding the reserve.

This plan also provides for the use of fire as a management tool to:

- Target area for maximum risk reduction
- reduce bushfire hazard to protect assets from bushfires
- maintain the long-term viability of the native vegetation in the reserve
- assist in the removal of weeds and the regeneration of degraded bushland.

1.2 Location and Description

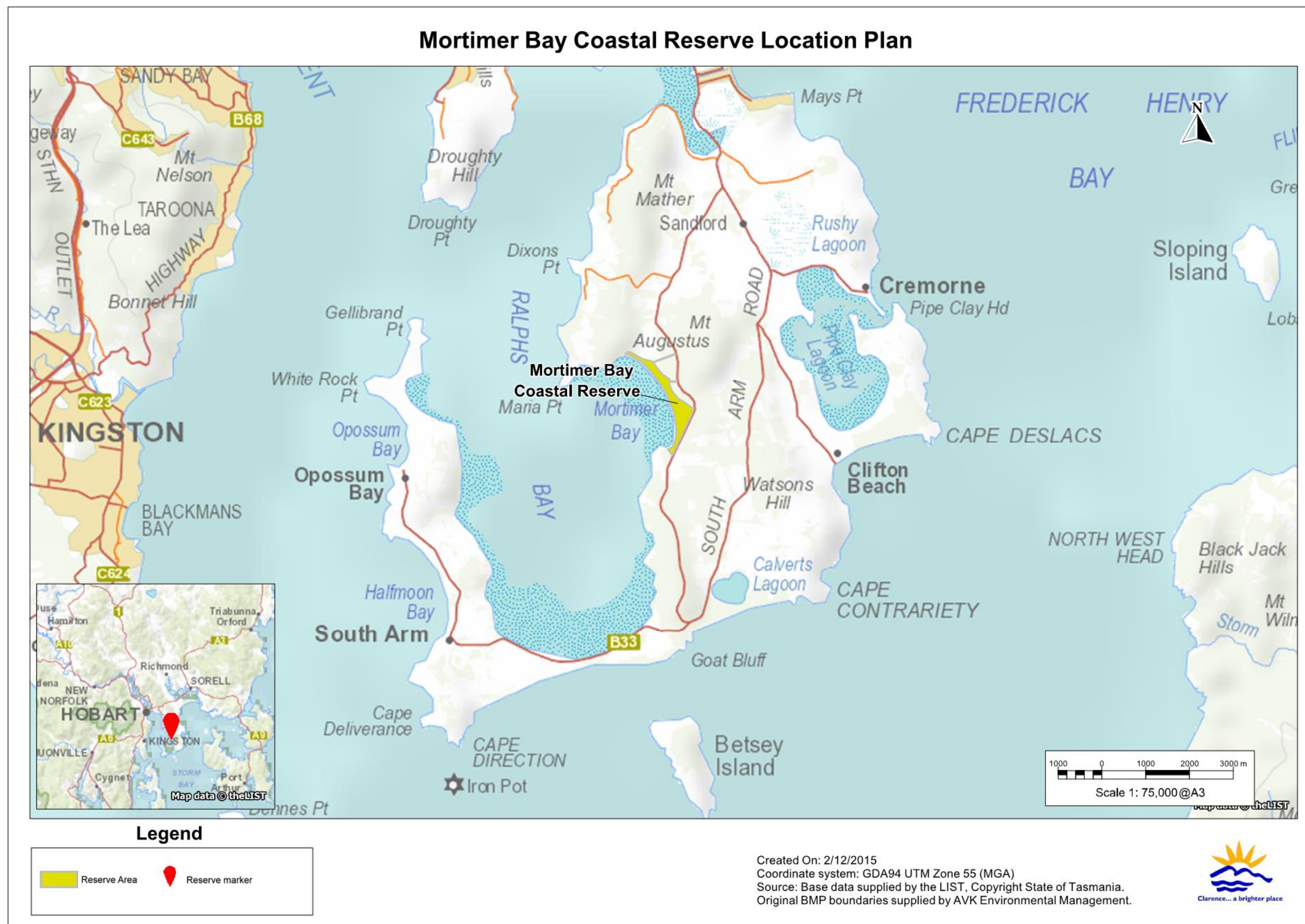
Mortimer Bay Coastal Reserve has an area of approximately 54^{ha} and is located on the shores of Mortimer Bay at Sandford (see figure 1). The reserve is long and narrow bounded by a thin coastal reserve along Gorringes Beach to the west managed by Tasmanian Parks and Wildlife Service. To the east are rural residential developments. The reserve occupies a dune and swale system although most of the dunes have been mined for sand and shell grit. The mined area was planted with pines (*Pinus radiata*) after mining ceased. Most of the reserve is in the low-lying swale area behind the former dunes.

Mortimer Bay Coastal Reserve has been mapped as a bushfire-prone area in the *Clarence Interim Planning Scheme 2015*. Any future developments within or adjacent may require a Bushfire Risk Assessment and a Bushfire Hazard Management Plan.

1.2.1 Geology and Soils

The reserve is underlain by Quaternary and recent windblown and locally derived sands. Soils are sandy grading to peaty in lower lying areas.

Figure 1 – Location of reserve



1.2.2 Vegetation

The major vegetation communities in the reserve are shown in figure 2. Vegetation types and community boundaries within the reserve are based on Tasveg 3.0 mapping, checked and modified where required following a survey of the reserve. The reserve contains a large open area of native lowland grassland complex (GCL) and a smaller area of coastal grass and herbfield (GHC), both a relic of past clearing. During 2006-2011 The local Coastcare Group planted the southern portion of this community with trees and shrubs. These are now established. Between this area and the beach is an area of Plantations for silviculture (FPL) – partly managed by Tasmanian Parks and Wildlife Service (PWS). *Pinus radiata* has been planted in this area to stabilise old sand mine workings. “The Mortimer Bay Coastcare Group has implemented a program over a number of years to progressively remove mature pines from the reserve. However, community consultation indicates mixed views on removing more trees due to their present role in providing wind protection, bird habitat and dune stabilisation.” (Tasflora, 2012).

There is 3.75ha area at the northern end of the reserve currently leased to Clifton Riding Club. This area consists mainly of introduced pasture grasses and is used for recreational equestrian activities.

The remainder of the reserve consists of grassy and shrubby woodlands and forests including

Eucalyptus amygdalina coastal forest and woodland (DAC), *Eucalyptus viminalis* – *Eucalyptus globulus* coastal forest and woodland (DVC), Regenerating cleared land (FRG) and *Eucalyptus ovata* heathy woodland (DOW) in lower lying areas. One of the access corridors to the reserve runs through and area of *Eucalyptus tenuiramis* forest and woodland on sediments (DTO).

Eucalyptus tenuiramis forest and woodland on sediments (DTO) and *Eucalyptus viminalis* – *Eucalyptus globulus* coastal forest and woodland (DVC) are listed as threatened native vegetation communities under the *Nature Conservation Act 2002*.

Council fire and bushland crew have been heap burning dead vegetation throughout the northern end of the reserve periodically since the last review in 2011.

1.2.3 Reserve Usage

The reserve is locally an important recreational area for activities such as; walking, bike riding, dog exercising, horse riding and jogging.

Clarence City Council engaged Tasflora to develop a Reserve Activity Plan (RAP) for Mortimer Bay Coastal Reserve in July 2012. This document has been in place since July 2012 and due for review in 2016.

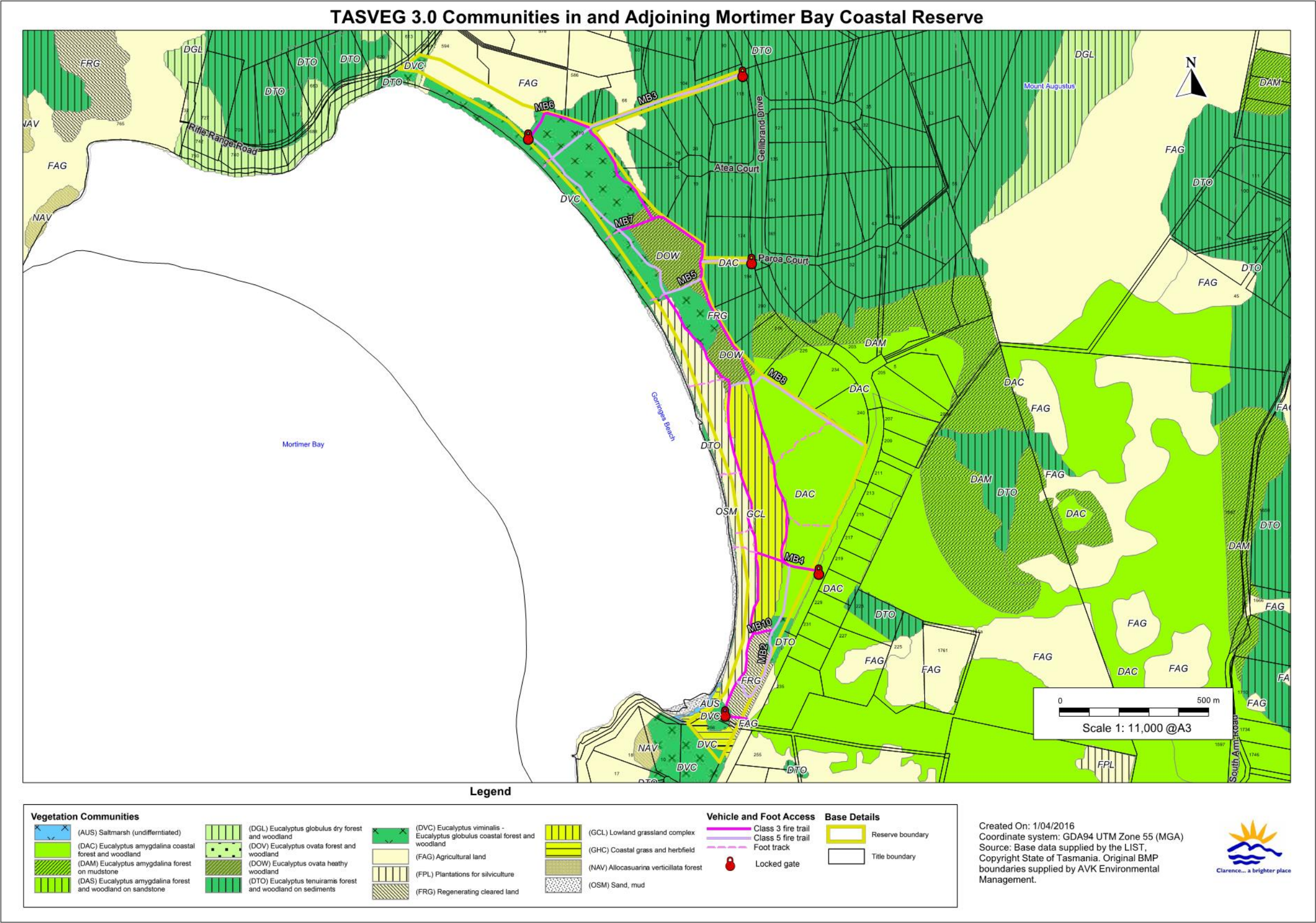
1.3 Bushfire Management Objectives

Bushfire management within the Mortimer Bay Coastal Reserve will meet the following broad management objectives:

1. Protection of life, assets and adjoining property from bushfire
2. Minimise the risk of fires starting and spreading in the reserve
3. Protection and enhancement of the ecological and visual values provided by the reserve
4. Protection of infrastructure and cultural heritage values within the reserve
5. Recovery, maintenance and enhancement of vegetation communities and fauna habitat within the reserve
6. Minimisation of soil loss resulting from bushfire, or bushfire management activities.

The actions recommended to attain each of these objectives are listed in section 5.1.

Figure 2 – Vegetation types in the reserve



Reserve Management Responsibilities

Management of the reserve is the responsibility of Clarence City Council. Tasmanian Parks and Wildlife Service (PWS) are responsible for the narrow coastal reserve between the Council reserve and Gorringes Beach. Clarence City Council has a responsibility under the *Fire Service Act (1979)* to take all reasonable precautions to prevent any fire lit on their property from spreading onto neighbouring property. This bushfire management plan will help to fulfil that “duty of care”. The TFS is responsible for suppressing bushfires within the reserve.

2. Bushfire Risks

Extreme bushfire conditions can occur in southern Tasmania when dry winters and springs are followed by summers where fuels are very dry. Under these conditions, fires can be expected to move quickly under the influence of strong, dry, north-westerly winds, and then move more or less at right angles on a broad front when the subsequent south-westerly wind change arrives. Fires that start under these conditions can reach a very high intensity, even in areas with relatively low fuel loads, and are very difficult to control until the weather conditions abate.

2.1 Bushfire History and Causes

The fire history of the Mortimer Bay Coastal Reserve is shown in figure 3.

2.1.1 Bushfires

There are no historical records of any bushfires within the reserve. The only bushfire close to the reserve in TFS records was in the adjoining coastal reserve and was listed as an escaped campfire.

2.1.2 Planned Fires

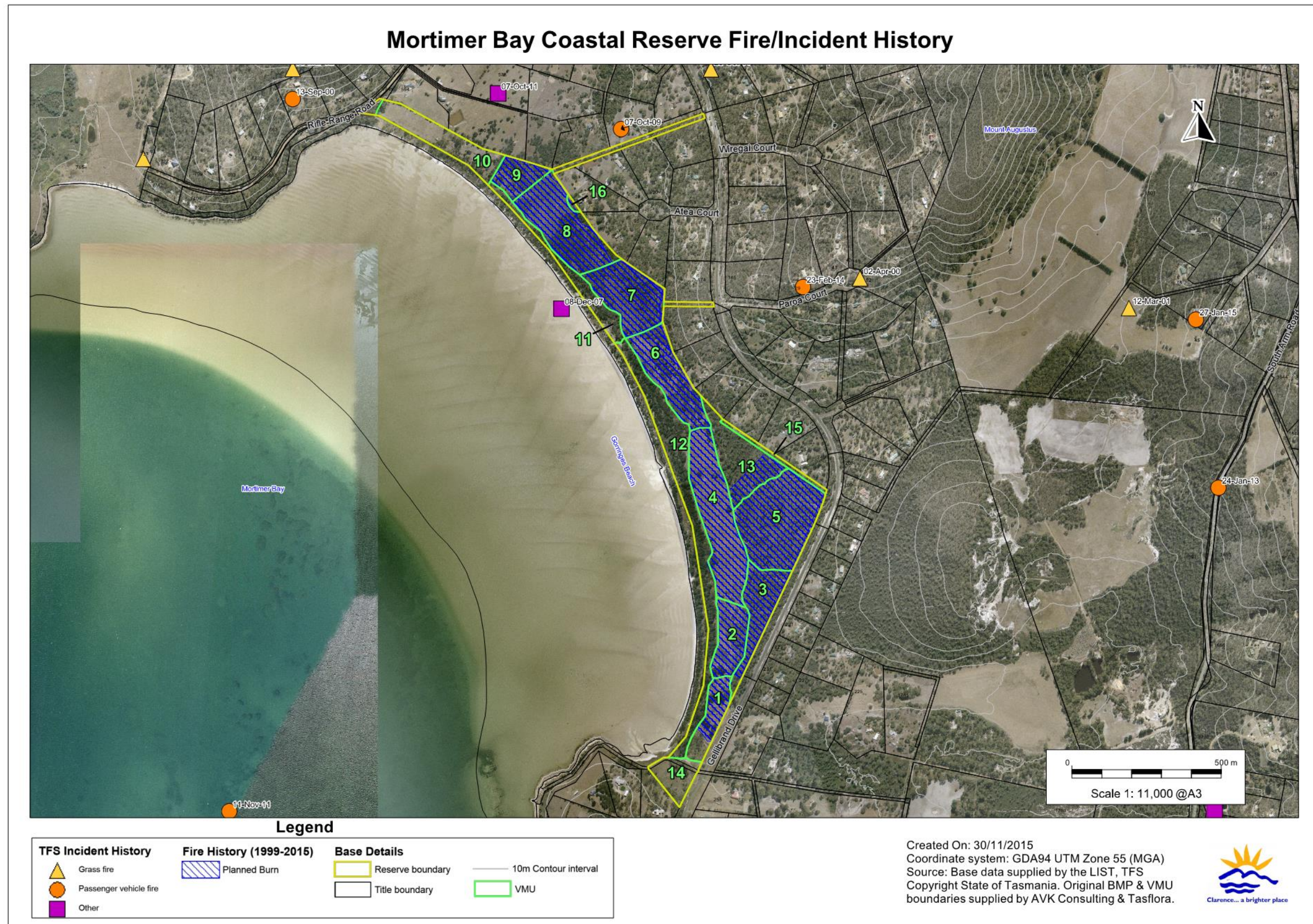
There were 6 planned burns within the reserve during the period of the previous bushfire management plan (see figure 3). The first record of planned burning within the reserve is April 1999.

2.2 Fuel Types and Hazard Levels

The higher the intensity of a bushfire the greater its destructiveness and the more difficult it is to control. As the intensity of a bushfire increases it becomes progressively more difficult to contain and suppress the bushfire. Very high intensity ($> 4000 \text{ kW/m}$ heat output at the fire front) fires with flame heights greater than 10 m are generally uncontrollable (NSW Rural Fire Service, 1997). Although grass fires rarely attain a very high intensity, they can move much faster than forest fires, thereby making them difficult to contain.

Bushfire intensity is a function of the heat content of the fuel, the quantity (load) of fuel, and the rate of spread of the bushfire. The heat content of vegetation fuels is roughly constant, and rate of spread is largely a function of slope and weather conditions (wind speed and relative humidity). It has been found that the quantity and distribution of fine fuels are the main factor influencing bushfire behaviour. Larger fuels burn during a bushfire but do not contribute significantly to the spread of a bushfire (NSW Rural Fire Service, 1997).

Figure 3 – Reserve fire history



Fine fuels consist of dead plant matter less than 6 mm in diameter and live plant matter less than 2 mm in diameter (including grasses, bracken, leaves, bark, and twigs and branches) (Marsden-Smedley, 2009). Fine fuel load (measured in tonnes per hectare) has therefore been used as a convenient measure of the underlying bushfire hazard in areas dominated by woody vegetation. The fine fuel load at any given time is a balance between the rate of fuel build-up, and factors that remove fuel, such as litter decomposition and bushfire. In the absence of fire, fuel loads in forests and woodlands with a shrubby or heathy understorey build up to a quasi-equilibrium state where the rate of fuel production equals the rate of decomposition. The maximum levels vary for different vegetation types and also for the same vegetation types in different locations (Conroy, 1988). The time taken to reach equilibrium fuel loads also varies, ranging from about 2 years in some native grasslands to about 20 to 40 years in dry eucalypt forests (Marsden-Smedley, 2009).

However, it has been found that the fuel structure is possibly more important than the total fine fuel load in determining bushfire behaviour (Marsden-Smedley, 2009). Fuel in forests, woodlands and shrublands can be categorised into four layers with differing effects on bushfire behaviour (Hines et al., 2010). These layers are:

- **Surface fine fuel;** leaves, bark, small twigs and other fine fuel lying on the ground. These fuels provide the horizontal continuity that allows a bushfire to spread.
- **Near surface fine fuel;** grasses, low shrubs, bracken etc. up to about 0.5 m above the ground surface. Fuels in this layer will burn when the surface fuel layer burns and will increase bushfire intensity.
- **Elevated fuels;** larger shrubs and small saplings with most of the fuel closer to the top of this layer and a clear gap between them and the surface fuels. These interact with the two lower fuel layers to further increase bushfire intensity. They also contribute to the vertical continuity of fuel that allows fire to 'climb' into the tree canopy.
- **Bark fuels;** flammable bark on trees, saplings and large bushes from ground level to the canopy. Loose fibrous bark on stringy-bark eucalypts, and candle bark on some gums can generate large amounts of burning embers which can start spot fires ahead of the main fire.

Canopy fuels are not usually included in fuel hazard assessments in forests and woodlands, but are included in shrubland and heath fuel types where they are equivalent to elevated fuels. If there is sufficient fuel in the lower fuel layers to start the canopy fuel burning (called a crown fire) bushfire intensity can increase considerably. Crown fires in forests are generally considered uncontrollable (Luke and McArthur, 1986).

The main fuel factor that influences the rate of spread of a bushfire is the quantity of near surface fuel whereas total fine fuel load is the main factor influencing bushfire intensity (Gould et al 2007).

In grasslands and grassy woodlands the degree of curing (dryness) of the fuel is considered at least as important as the actual fuel load (Cheney and Sullivan, 2008). Grass goes through an annual cycle with new growth in spring drying out over summer.

The bushfire hazard in grassland areas is greatest when the grass is fully cured which usually occurs during the period from December to April depending on seasonal breaks and significant summer rainfall events. However, grasslands that are not grazed or slashed over winter can burn in spring if cured grass from the previous growing season is still present.

Unlike bushland dominated by woody plants, grasslands can accumulate fuel very rapidly, and therefore burning is not a very effective method of hazard reduction. As grass fuel decomposes faster than eucalypt leaves and twigs, and is more likely to be eaten by herbivores, fuel loads in grasslands and grassy woodlands can fluctuate from year to year (Cheney and Sullivan, 2008).

Fuel loads can be roughly categorised in terms of the potential threat they pose as follows:

Low - < 5 tonnes per hectare

Moderate - 5 to 15 tonnes per hectare

High - >15 tonnes per hectare.

The characteristics of each fuel type in the Mortimer Bay Coastal Reserve are given in table 1. The TASVEG 3.0 codes of the vegetation types in figure 2 corresponding to each fuel type are listed under the fuel type.

Table 1 – Characteristics of the different fuel types in the reserve

FUEL TYPE	FUEL HAZARD CHARACTERISTICS	BUSHFIRE BEHAVIOUR AND CONTROL
Shrubby forest / woodland DAC DVC DOW	Canopy, bark, elevated, near surface and surface fuels all present. Shrub layer to about 1m in height but some areas have shrubs up to 3m high. Near surface fuels a mixture of grasses, bracken and heathy shrubs. Leaf and bark fall around trees contributes to a gradual build up of fuel, particularly around the base of trees. Generally moderate overall fuel loads, but high where there is dense shrub growth. Grass component of the fuel load has build up fuel rapidly after previous planned burning. Bracken and Lomandra sp. are dominant fuel components in VMU's that have been subject to planned burning in last 10 years.	Can burn with moderate to high intensity depending on the degree of fuel accumulation. Significant ember attack on structures downwind of the bushfire and spotting across containment lines can be expected. Capable of carrying a bushfire at any time of year if there is a sufficient amount of litter on the ground. Tree cover can sustain a crown fire and the eucalypts, particularly old hollow trees and those with rough bark, will be a source of burning embers which can carry a bushfire over nearby fire control lines (roads, fuel breaks) and threaten nearby buildings. Hazard reduction burning is effective in removing accumulated litter, elevated fuels and the bark fuels largely responsible for spotting, but grass and bracken fuels can be replenished within a year or two after a burn.

FUEL TYPE	FUEL HAZARD CHARACTERISTICS	BUSHFIRE BEHAVIOUR AND CONTROL
Grassy forest / woodland DTO	Canopy, near surface and surface fuel all present, bark fuels only present on roughed barked trees and shrubs. Moderate fuel loads, grass cover generally sparser and lower in height than in open grassland. Leaf and bark fall around trees contributes to a gradual build up of fuel, particularly around the base of trees. Grass component of the fuel load can build up fuel rapidly after a bushfire.	Can burn with moderate to high intensity depending on the degree of fuel build-up. Significant ember attack on structures and spotting across containment lines can be expected. Capable of carrying a bushfire at any time of year if there is a sufficient amount of litter on the ground, and/or cured grass. Tree cover is generally too sparse to sustain a crown fire, however, the eucalypts, particularly old hollow trees, will be a source of burning embers which can carry a bushfire over nearby fire control lines (roads, fuel breaks) and threaten nearby buildings. Hazard reduction burning is effective in removing accumulated litter and the bark fuels largely responsible for spotting, but grass fuels can be replenished within a year after a burn.
Pine Plantation FPL	Moderate to high overall fuel loads, predominantly canopy and bark fuels. High proportion of the fuel finely divided and in the canopy. Relatively low surface and near surface fuel loads.	Can sustain a running crown fire of high intensity on days of extreme bushfire weather that would be difficult to control. Significant ember attack on nearby structures and spotting across containment lines can be expected. Except where there is a significant shrub layer planned burning will have little effect of the bushfire hazard as most of the fuel is in the canopy.
Unmanaged grassland GCL GHC FRG	Native and introduced grasses, near surface and surface fuels present. Potential for dense elevated fuels to about 1 m high following wet winters and springs. Flammability dependant on degree of curing of the grass. Grass fuels can be replenished within a year after a burn.	Can generate rapidly moving, moderate intensity fires in late summer and early autumn. Fires can occur at other times of the year if the cured standing crop from the previous year's growth persists. Likely to be relatively little spotting so fires can usually be stopped at roads and firebreaks, however, fires may be uncontrollable in extreme conditions.

Near surface and elevated fuels in the form of shrubs and grasses are by far the major fuel components in the reserve. Bushfires in these fuel types could be difficult to control, and most planned burns in this fuel type will be of moderate intensity.

2.3 Bushfire Threat and Risk to Persons

The main bushfire threat to the Mortimer Bay Coastal Reserve is considered to come from fires that start at the northern end of the reserve, or on adjoining property, on days with strong northerly to north-westerly winds. Such fires could quickly run the length of the reserve and threaten adjoining property. This risk is mitigated by good access in the reserve for fire fighters and the planned burning program that creates areas with reduced fuel that can be used as control lines. As the reserve is relatively narrow and it is easy to reach cleared areas, either on the beach or on adjoining private property, the risk to persons in the reserve is considered to be low.

2.4 Assets at Risk from Bushfire

Assets potentially at risk from bushfire include; dwellings, infrastructure, and other items (such as ornamental and regeneration plantings) which would cost money to replace; as well as items of scenic, cultural and natural heritage value which could be damaged or destroyed by a bushfire, or bushfire suppression activities. Each landowner has an obligation to reduce a bushfire hazard where it is a threat to neighbouring properties. However, even with extensive hazard reduction burning, the risk of high intensity bushfires occurring in the reserve cannot be eliminated. Therefore consideration must be given to protection measures that will reduce the risk of bushfire damage to assets in and surrounding the reserve. Assets within and surrounding the reserve that are considered at risk from bushfires are shown in figure 4.

2.4.1 Bushfire Risk to Natural Heritage Assets

The conservation value of the plant communities in the Mortimer Bay Coastal Reserve is given in table 2. Six plant species of conservation value are known to occur within the reserve. These species are listed in table 3 along with responses to bushfire.

Fauna of conservation value reported within the reserve include the swift parrot (*Lathamus discolor*), brown tree frog (*Litoria ewingii*) and the eastern barred bandicoot (*Perameles gunnii*).

Recent recorded fauna of conservation value adjacent to the reserve include the Tasmanian beetong (*Bettongia gaimardi*), Pied oystercatcher (*Haematopus longirostris*), Tawny frogmouth (*Podargus strigoides*) and Tasmanian pademelon (*Thylogale billardierii*).

The fairy tern (*Sterna nereis*) has been recorded on Gorringes Beach close to the reserve. The reserve is also considered to provide suitable habitat for the masked owl (*Tyto novae-hollandiae*). The habitat requirements and preferred bushfire management of these species is given in table 4.

Table 2 – Conservation value of native plant communities

TASVEG 3.0 CODE	EQUIVALENT FLORISTIC COMMUNITY ¹	Conservation Status ²
DVC	DRY-hVIM-co Heathy/Shrubby <i>E. viminalis</i> coastal forest	THREATENED NATIVE COMMUNITY
DAC	DRY-hAM-co Heathy Coastal <i>E. amygdalina</i>	Not threatened
DOW	DRY-hOV Heathy <i>E. ovata</i> forest	Not threatened
DTO	DRY-hTEN-mud Grassy <i>E. tenuiramis</i> forest	THREATENED NATIVE COMMUNITY
GHC	Various floristic associations	Not threatened
GCL	Various floristic associations	Not threatened

1. Forest Practices Authority (2005)

2. Nature Conservation Act 2002

Figure 4 - Assets at risk from bushfire

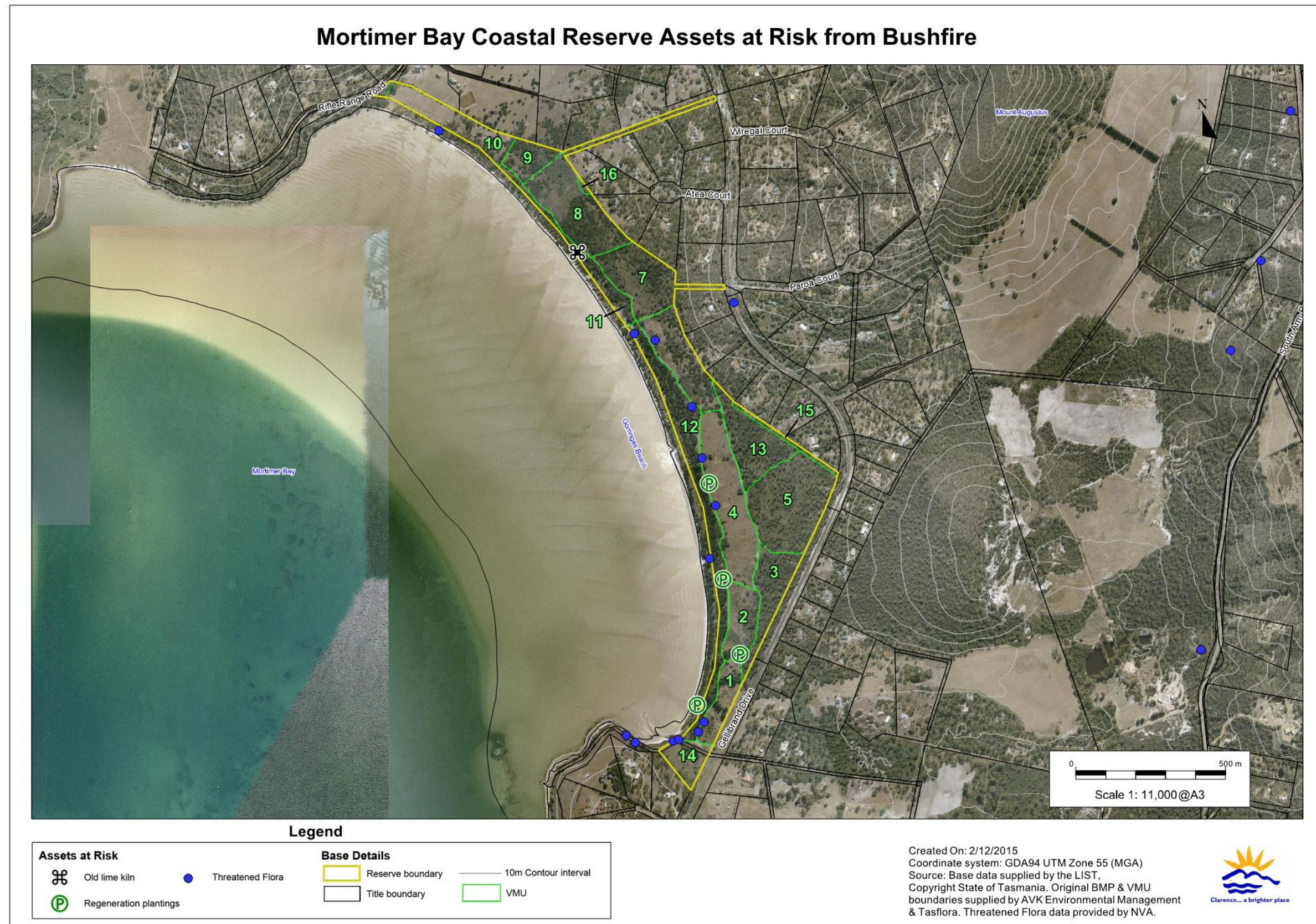


Table 3 - Plant species of conservation value and preferred bushfire management

SPECIES	CONSERVATION STATUS ¹	OCCURRENCE	RESPONSE TO BUSHFIRE AND MANAGEMENT	ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC Act) STATUS
<i>Acianthus caudatus</i> Mayfly orchid	Not threatened	Records are localised in the southern end of the reserve.	Species have been reported to be inhibited by fire, recovering after the surrounding bush recovers.	Not threatened
<i>Cynoglossum australe</i> Coast houndstounge	RARE	Records are localised to the far southern end of the reserve although likely to be more widespread.	Regenerates from seed following bushfire - sometimes prolifically.	Not threatened
<i>Lepilaena preissii</i> Slender watermat	RARE	Records are localised to the northern end of the reserve.	There is currently no information available regarding response to bushfire and management of this species.	Not threatened
<i>Pterostylis alta</i> Striped greenhood	Not threatened	Records are localised to the northern end of the reserve.	There is currently no information available regarding response to bushfire and management of this species.	Not threatened
<i>Pterostylis williamsonii</i> Brownlip greenhood	Not threatened	Records are scattered from the central area heading north of the reserve	There is currently no information available regarding response to bushfire and management of this species.	Not threatened
<i>Thelymitra rubra</i> Pink sun-orchid	Not threatened	Records are localised in the central region of the reserve.	Stimulated to flower post fire.	Not threatened

1. Tasmanian Threatened Species Protection Act 1995

Table 4 - Fauna of conservation value and preferred bushfire management

SPECIES	CONSERVATION STATUS ¹	HABITAT AND PREFERRED BUSHFIRE MANAGEMENT	ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC Act) STATUS
<i>Bettongia gaimardi</i> Tasmanian bettong	Not listed but 'requires monitoring' ²	<p>Widespread and well represented in dry sclerophyll forest. Research suggests that activity at a site usually increases immediately following a bushfire but subsequently declines as the dense regrowth provides less favourable habitat (Driessen et al., 1991). The relationship between bettong abundance and bushfire is not clear-cut and it has been suggested that frequent firing of habitat will cause a long-term decline in the species richness and abundance of soil fungi (Johnson, 1997). These fungal species are associated with the litter layer and organic matter near the soil surface and are thus sensitive to bushfire. Bushfire is thought to synchronise fruiting cycles within populations of fungi so that they trigger a pulse sporocarp production and this is followed by years of low sporocarp production (Johnson, 1997).</p> <p>Management should maintain a diversity of bushfire age classes in dry forest ensuring both a spatial and temporal mosaic and help mitigate devastating bushfires.</p>	Not threatened
<i>Haematopus longirostris</i> Pied oystercatcher	Not threatened	<p>Not known to breed in the Mortimer Bay Coastal Reserve, although the adjacent Gorringes Beach contains suitable habitat.</p> <p>Ensure planned burns within reserve maintained within boundaries.</p>	Not threatened

SPECIES	CONSERVATION STATUS ¹	HABITAT AND PREFERRED BUSHFIRE MANAGEMENT	ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC Act) STATUS
<i>Lathamus discolor</i> Swift parrot	ENDANGERED	<p>Known to breed in Meehan Range and likely to nest elsewhere. Nests in hollows in old growth eucalypts (Brereton, 1997).</p> <p>Blue gums (<i>Eucalyptus globulus</i>) provide a preferred foraging habitat although swamp gums (<i>E. ovata</i>) are recognised as being particularly important as an alternative nectar source. The swift parrot feeds in the tree canopy and therefore an extensive, high-intensity bushfire which scorched the canopy could reduce the potential food resources for this species within a reserve. However, a temporary loss of food resources in a reserve due to a localised bushfire is unlikely to have a significant impact on regional food sources for this species.</p> <p>Management should aim to avoid crown damage to larger trees by keeping planned burns at a low intensity and reducing the bushfire hazard to reduce the intensity of bushfires.</p>	ENDANGERED
<i>Litoria ewingii</i> Brown tree frog	Not threatened	<p>Not known to breed in the Mortimer Bay Coastal Reserve, although the reserve contains suitable habitat of temporary and permanent water.</p> <p>A potentially lethal frog disease, the chytrid fungus (pronounced "kit rid"), has been discovered in Tasmania, and now occurs across much of the State. The disease has been implicated in significant declines and extinctions globally - currently one third of all amphibian species are considered threatened worldwide.</p> <p>Chytrid infection has spread widely in habitats associated with human disturbance. Although infected frogs are rarely observed in the wild, the disease can lead to abnormal behaviour and posture. (Tasmania Parks and Wildlife Service, 2015.)</p> <p>Exclude fire around significant areas of sitting water within reserve.</p>	Not threatened

SPECIES	CONSERVATION STATUS ¹	HABITAT AND PREFERRED BUSHFIRE MANAGEMENT	ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC Act) STATUS
<i>Perameles gunnii</i> Eastern barred bandicoot	Not threatened	Grasslands (both native and introduced) and grassy woodlands. Dense cover of regrowth is likely to be unsuitable habitat. Mosaic burning will ensure open habitats are maintained and help mitigate devastating bushfires.	VULNERABLE
<i>Podargus strigoides</i> Tawny frogmouth	Not threatened	Reports show significant overall declines for the Tawny Frogmouth across all but one of the regions in which they occur. Considered adaptable, however living near to human habitation has exposed it to car strikes while chasing prey or feeding on roadsides. (Department for Environment and Heritage, 2015). Management should aim to avoid crown damage to regrowth trees by keeping planned burns at a low intensity and reducing the bushfire hazard to reduce the intensity of bushfires.	Not threatened
<i>Sterna nereis</i> Fairy tern	VULNERABLE	Known to have breed on the southern spit in the early 80's. Beach nesting species, highly vulnerable to disturbance when nesting. Disturbance such as bushfire in the foredunes is likely to have an adverse impact on breeding success.	VULNERABLE
<i>Thylogale billardierii</i> Tasmanian pademelon	Not threatened	Species is abundant and widespread throughout the state of Tasmania. Feral cats contribute to the extinction of numerous Australian mammals and are a major threat to the species. Maintain a mosaic of planned burns avoiding burning adjacent vegetation management units (VMUs) within a two year interval. Maintain clumps of thick vegetation when possible.	Not threatened

SPECIES	CONSERVATION STATUS ¹	HABITAT AND PREFERRED BUSHFIRE MANAGEMENT	ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC Act) STATUS
<i>Tyto novaehollandiae</i> Masked owl	ENDANGERED	<p>This species requires large hollows for suitable nesting.</p> <p>Not known to breed in the Mortimer Bay Coastal Reserve, although the reserve contains suitable habitat.</p> <p>Overfrequent fires leads to loss of large hollow bearing trees, although occasional fires can help in the creation of hollows.</p> <p>Avoid burning trees with large hollows during planned burns.</p>	VULNERABLE

1. Tasmanian *Threatened Species Protection Act* 1995

2. Vertebrate Advisory Committee, 1994.

The bushfire sensitivity and flammability ratings of the vegetation types in the reserve according to Pyrke and Marsden-Smedley (2005), is given in table 5.

Table 5 – Fire attributes of the vegetation

TASVEG 3.0 CODE	FIRE SENSITIVITY	FLAMMABILITY
DVC	Low	High
DAC	Low	High
DOW	Low	High
DTO	Low	High
FPL	Extreme	Moderate
GCL	Low	High
GHC	Low	High
FRG	Low	Moderate

Flammability classification of Tasmanian vegetation (Pyrke & Marsden-Smedley, 2005)

FLAMMABILITY	CRITERIA FOR FLAMMABILITY
Very high	Will burn readily throughout the year even under mild weather conditions, except after recent rain (i.e. less than 2-7 days ago).
High	Will burn readily when fuels are dry enough but will be too moist to burn for lengthy periods, particularly in winter. Fuels will be dry enough to burn on most days from late spring to early autumn.
Moderate	Extended periods without rain (i.e. two weeks at least) and/or moderate or stronger winds are required for these communities to burn.
Low	These communities will burn only after extended drought (i.e. four weeks without rain) and/or under severe bushfire weather conditions (i.e. forest fire danger index > 40).

Note: recently burnt stands of low or moderate flammability classes may have a higher flammability rating.

Fire sensitivity classification of Tasmanian vegetation (Pyrke & Marsden-Smedley, 2005)

FIRE SENSITIVITY	ECOLOGICAL IMPACT OF BUSHFIRE	MANAGEMENT RECOMMENDATIONS
Extreme	Any bushfire will cause either irreversible or very long-term (> 500 years) damage.	Suppress all bushfire. Highest priority for bushfire suppression.
Very high	A single bushfire will cause significant change to the community for 50–100 years and will increase the probability of subsequent fires changing the community permanently.	Suppress all bushfire. High priority for bushfire suppression.
High	A bushfire-adapted community requiring at least 30 years between fires to maintain the defining species. Bushfire intervals greater than 80 years are required to reach mature stand structure.	Suppress all bushfire, but give higher priority to stands burnt less than 80 years ago.
Moderate	A bushfire-adapted community requiring at least 15 years between fires to maintain the defining species.	Suppress fires in stands burnt less than 20 years ago.
Low	Highly bushfire-adapted or non-native vegetation. A single bushfire will generally not affect biodiversity, although repeated short intervals (i.e. < 10 years) may cause long-term changes.	Suppression usually not an ecological priority except in specific situations (e.g. a recently burnt stand of a threatened species).

The low fire sensitivity of the native vegetation in the reserve indicates that it is highly fire adapted and a single bushfire will generally not adversely affect biodiversity, though repeated fires at intervals of less than 10 years may cause long-term changes in floristics and vegetation structure (Pyrke & Marsden-Smedley 2005). The high flammability rating of the native bushland in the reserve in Pyrke & Marsden-Smedley (2005) indicates that the bushland in the reserve will burn readily when fuels are dry but may be too moist to burn for long periods during winter. Fuels will generally be dry enough to burn on most days from late spring to early autumn.

2.4.2 Bushfire and Habitat Management

The main bushfire risk to natural heritage assets in the reserve is from fire regimes (planned or unplanned) that are outside the thresholds within which a particular plant community, or habitat for flora and fauna species, has viability in the long-term. Fire regimes within the thresholds of a particular plant community will help maintain its long-term viability, whereas fire regimes outside the thresholds are likely to lead to progressive changes in the structure and floristics of the plant community, and loss of habitat for the fauna favouring that plant community.

High intensity bushfires that burn the whole of the reserve can damage or destroy valuable fauna habitat including:

- Tree hollows used as nests and dens by many birds and arboreal mammals.
- Mature, senescing or dead trees that can be important invertebrate, bird and reptile habitat, and take a long time to replace.
- Understorey species that provide nest and shelter sites as well as a food source for many bird and mammal species.

- Fallen logs, bark and leaf litter that provide shelter and a food source for invertebrates, frogs, reptiles, birds and mammals.

Species may be lost from the reserve if they cannot recolonise from nearby areas, or survive in unburnt patches.

Bushfires often stimulate the spread of environmental and other weeds. However, some weed species provide significant protection and food sources for fauna (for example, gorse and blackberry) and removal of these species should be carefully managed to ensure they are progressively replaced by equivalent native species habitat.

The healthy *Eucalyptus amygdalina* forest which forms an extensive stand adjoining Gellibrand Drive is of ecological interest. This is a fine example of this community with a diverse flora and structural complexity providing rich fauna habitat. The composition of the biodiversity values would be best managed by a varied bushfire management regime. The vegetation includes a healthy component on the well-drained sandy higher ground which benefits from regular bushfire to allow for the maintenance of open ground to encourage short lived and ephemeral species such as orchids to proliferate. Bushfire however can favour the proliferation of bracken to the detriment of these species and so where bracken is well established an extended absence from bushfire may be a useful tool to reduce its vigour.

Less well drained areas can support an open wet heath with regular bushfire but can also mature into dense scrubby understorey dominated by tea tree and paperbark which provides different habitat values. A varied bushfire management again can ensure the mosaic of vegetation types is encouraged.

The long-term management of the vegetation in the reserve requires consistent planning. The previously cleared swale behind the dunes now supports a varied vegetation of open native grassland through to wet heath. Fire provides an effective management tool for maintaining the open habitat. However, some areas have been subject to planting of trees and shrubs prior to the previous revision of this BMP. These plantings have now established. Planned burning has been excluded in most of these locations throughout the duration of the previous BMP. It is recommended that planned burning continue to be excluded in these locations until the plantings can survive a low intensity planned burn. The plantings will also lead to a conversion from open habitat to closed forest as the trees mature. Some areas should be retained as open habitats and so be excluded from future tree planting to allow for the regular and frequent burning regime. It is recommended that some areas of Poa grassland are maintained as such and that similarly some of the open heath is allowed to persist. Planting should be carried out to enhance the existing biodiversity in the reserve as part of a long-term plan, not just for aesthetics.

Coast paperbark (*Melaleuca ericifolia*) is native to the northern half of the Tasmanian coast. As with some other species of this genus it acts like a weed if allowed to establish outside of its natural

range. This shrub has been planted in the past at Mortimer Bay and is established at one site where it is beginning to sucker out from the original plantings. The current RAP prepared by Tasflora recommends the identification and removal of previously planted *Melaleuca ericifolia* to prevent their future spread throughout the reserve.

Planned burning of the native vegetation in the reserve at the optimum frequency for its long-term viability is considered the best way to conserve important habitat for both flora and fauna in the reserve. Planned burning in a mosaic pattern along with maintenance of fire trails is the best way to minimise the risk of high intensity bushfires in the reserve. The bushfire management requirements of the different plant communities/habitats in the reserve are given in table 6. These plant communities have been grouped together according to their bushfire management requirements.

Table 6 - Bushfire management requirements of the plant communities in the reserve

TASVEG 3.0 MAPPING UNITS	BUSHFIRE IMPACTS AND BUSHFIRE MANAGEMENT AIMS
Heathy dry sclerophyll forests and woodlands	
<p>DAC - <i>Eucalyptus amygdalina</i> coastal forest and woodland</p> <p>DVC- <i>Eucalyptus viminalis</i> and / <i>E. globulus</i> coastal forest and woodland</p> <p>DOW <i>Eucalyptus ovata</i> heathy woodland</p>	<p>Bushfire controls the establishment of a dense shrubby understorey which would reduce light penetration to the ground layer. This can help maintain a diversity of heathy shrubs and herbs.</p> <p>Frequent bushfires can encourage a dense bracken layer that can suppress other ground layer species.</p> <p>Bushfire provides an opportunity for bushfire dependent species to germinate.</p> <p>Optimal bushfire interval for maintaining these communities is 15-25 years.</p> <p>Exclude bushfire from representative areas to provide controls for monitoring the effects of bushfire.</p>
Grassy dry sclerophyll forests and woodlands	
<p>DTO -<i>Eucalyptus tenuiramis</i> forest and woodland on sediments</p>	<p>Infrequently burnt sites develop a dense shrubby understorey. Kangaroo grass (<i>Themeda triandra</i>) can die out after an extended absence of bushfire, or other method of biomass reduction (Lunt & Morgan, 1998).</p> <p>Frequent fires (< 5 years) can inhibit tree regeneration and eliminate the shrubby component.</p> <p>Sites overlying dolerite and other more fertile soils have markedly more rapid rates of regeneration than low fertility soils derived from mudstone and sandstone.</p> <p>Overfrequent burning regimes in the past within much of forest overlying mudstones has contributed to loss of topsoil and erosion.</p> <p>Extended absence from bushfire can result in build-up of fuel causing hot and damaging burns.</p> <p>A temporal and spatial mosaic burning pattern would assist with tempering the effects of a devastating bushfire.</p> <p>Optimal bushfire frequency is 5-20 years on fertile sites.</p> <p>Exclude bushfire from most areas on mudstone, which due to low fertility have low biomass growth rates and are drought stressed.</p>

TASVEG 3.0 MAPPING UNITS	BUSHFIRE IMPACTS AND BUSHFIRE MANAGEMENT AIMS
Non-native forests	
FPL – pine plantation	<p>Trees may survive a low intensity bushfire but are likely to be killed by a moderate to high intensity bushfire.</p> <p>Pines will regenerate prolifically after a bushfire.</p> <p>Exclude bushfire for the duration on the plan.</p>
Grasslands	
GCL – lowland grassland complex	<p>Bushfire intervals > 5 years may lead to a loss of biodiversity in grassy sites (Lunt & Morgan, 1988).</p> <p>Frequent fires (< 5 year intervals) may lead to a loss in diversity of invertebrates.</p> <p>Low fire sensitivity and high flammability – appropriate fire interval 3-50 years. Suppression not usually an ecological priority except in specific situations (Pyrke & Marsden-Smedley, 2005).</p> <p>Burn every 3 to 5 years.</p>
Coastal vegetation	
GHC – coastal grass/herbfields	<p>Variation in bushfire frequency and intensity within coastal vegetation can lead to the evolution of different communities (Harris, 1991).</p> <p>Bushfire can lead to destabilisation of sand dune environments. Successional processes in coastal grassland are inhibited by bushfire.</p> <p>Exclude fires from all coastal vegetation for the duration of the plan.</p>

2.4.3 Bushfire Risk to Built and Cultural Assets

During the BMP review process Aboriginal Heritage Tasmania (AHT) completed a requested search of the Aboriginal Heritage Register (AHR) regarding the area inside the BMP boundary.

There are known Aboriginal heritage site within the reserve. In addition there are sites in the adjoining coastal reserve. Any artefacts that are inadvertently uncovered within the reserve should be immediately reported to Aboriginal Heritage Tasmania and an aboriginal heritage officer engaged to assess the area prior to any further on ground work being undertaken (Tasflora, July 2012).

The remains of a small kiln used to make cement from shell mined on the beach is also evidence of past European usage of the area.

Infrastructure in the reserve likely to be at risk from bushfires is a sign at the southern entrance, a small coppers log and rail structure near the southern entrance and fences including perimeter and two internal fence lines. There is also some minor equipment in the area leased by the pony club (jumps etc.) but it would be more costly to provide bushfire protection than its replacement cost if damaged in a bushfire.

Dwellings on properties adjoining the reserve are far enough from the reserve boundary to provide an adequate defendable space on the lot, and most adjoining lots are well managed.

The degree of bushfire danger at any particular time is a combination of fine fuel quantity, slope, and the prevailing weather conditions. The actual risk of a bushfire causing damage to an asset is a function the degree of danger, the probability of a bushfire igniting, and any measures taken to prevent the bushfire causing damage.

The four major modes of attack by bushfires that can cause damage to assets are:

1. wind-blown burning debris
2. radiant heat which can ignite flammable materials ahead of the fire front and shatter glass
3. flame contact
4. strong winds generated or intensified by the bushfire.

The potential for damage to buildings in the path of large fires burning out of the reserve will depend largely on:

- whether the bushfire will approach upslope or downslope
- the quantity and distribution of fuel surrounding the building
- whether they are defended during the bushfire
- their design
- if the building was constructed to Australian Standard 3959-2009, *Construction of Buildings in Bushfire-prone Areas*
- How well they have been maintained.

The Australian Standard for Construction of buildings in bushfire-prone areas (AS:3959 – 2009) uses a Fire Danger Index (FDI) of 50 to determine the Bushfire Attack Level (BAL) for buildings that need to comply with the standard. An FDI of 50 is the boundary between Very High and Severe Fire Danger Rating.

There is insufficient data available to assess the likelihood of a high intensity bushfire starting in the reserve; however there is sufficient fine fuel within the reserve to sustain a high intensity bushfire on days of extreme fire danger. The bushfire risk to the built and cultural heritage assets within and surrounding the reserve has been assessed using a procedure adapted from the National Emergency Risk Assessment Guidelines (NEMC, 2010). The assessment process is explained in section 5.4 of *Clarence City Council Bushfire Management Strategy for Council Owned and Controlled Land*, and the results and proposed management strategies are shown in table 7. This assessment process has been analysed and meets compliance with AS/NZS IOS:31000-2009. Note that the assessment in table 7 only considers the risk from fires starting in, or passing through the reserve. Some assets may face a greater bushfire risk from nearby bushfire hazards that are not under the control of Clarence City Council. Some assets, such as the old lime kiln site, may not be directly damaged by bushfire but may be damaged by bushfire management and bushfire suppression activities, such as constructing fire control lines. These risks are noted under “other risks” in table 7.

NOTE: It was not possible to inspect assets on properties adjoining the reserve. The risk assessment therefore makes the following assumptions about these assets:

- Landowners/residents have established and are maintaining a defensible space to Tasmania Fire Service specifications around vulnerable assets, either wholly within the lot, or up to the boundary with the reserve where there is insufficient space within the lot. Where this is not the case the asset may face a much higher bushfire risk than indicated in the risk assessment.
- All dwellings adjoining the reserve are well maintained to resist attack by wind-blown burning embers. Where this is not the case the asset may face a much higher bushfire risk than indicated in the risk assessment.

The management strategies recommended in table 7 will reduce the existing bushfire risk to built and cultural assets but in most cases will not eliminate it. Active protection of an asset during a bushfire can greatly reduce the bushfire risk. Assets at medium and high risk of damage from bushfire will need to be protected during planned burns in the reserve.

Table 7 - Bushfire risk assessment for built and cultural assets

RISK CATEGORIES

LOW – asset of low value or considered to have a low risk of damage from bushfires in the reserve due to its construction, location, or protection measures already in place.

MODERATE – asset is vulnerable to damage by bushfires and could face attack by a moderate to high intensity bushfire, but has features that will reduce the intensity of the fire attack, or provide some protection from fires. Further bushfire protection measures are required.

HIGH – asset is of high value, is vulnerable to damage by bushfires and could face attack by a high intensity bushfire with few, if any, features that would reduce the intensity of fire attack. Further bushfire protection measures are required.

ASSET AT RISK	RISK ANALYSIS (See section 5.4 of the Bushfire Management Strategy)								OTHER BUSHFIRE RISKS	PROPOSED MANAGEMENT STRATEGIES
	A	B	C	D	E ¹	F	G	Level of Risk		
Dwelling on 29 Atea Court	5	2	3	2	2	1	6	720 Moderate		Advise residents of the need to maintain an adequate defensible space around their dwelling. Maintain a 15 m wide outer zone in the reserve adjoining the dwelling (includes the perimeter fire trail). See MP 6 in the Best Management Practice Guidelines.
Dwellings on 613 and 629 Rifle Range Road	5	3	3	2	0.2	2	6	216 Low		Advise residents of the need to maintain an adequate defensible space around their dwellings. No outer zone required in the reserve.
Dwellings on 19 and 25 Atea Court	5	2	3	2	0.2	2	6	144 Low		Advise residents of the need to maintain an adequate defensible space around their dwellings. No outer zone required in the reserve.
Pony club assets	2	2	3	2	3	1	2	144 Low		Replace if damaged by bushfire.
Dwellings on 226, 234 and 240 Gellibrand Drive	5	2	3	2	0.2	1	6	72 Low		Advise residents of the need to maintain an adequate defensible space around their dwellings. Maintain a minimum 5 m wide outer zone along the reserve boundary to complement the defensible space on the lots. See MP 6 in the Best Management Practice Guidelines.

ASSET AT RISK	RISK ANALYSIS (See section 5.4 of the Bushfire Management Strategy)								OTHER BUSHFIRE RISKS	PROPOSED MANAGEMENT STRATEGIES
	A	B	C	D	E ¹	F	G	Level of Risk		
Dwellings on 174, 194, 200, 211, 213, 215, 216, 217, 219, 221, 229, 231, 233, 235, 255 and 267 Gellibrand Drive	5	2	3	2	0.2	1	6	72 Low		Advise residents of the need to maintain an adequate defensible space around their dwellings. No outer zone required in the reserve.
Metal Interpretation signs	2	2	3	1	2	2	1	72 Low		Replace signs that cannot be cleaned after a bushfire.
Dwellings on 590 and 594, Rifle Range Road	2	2	3	2	0.2	2	6	57.6 Low		Advise residents of the need to maintain an adequate defensible space around their dwellings. No outer zone required in the reserve.
Dwelling on 2 Granary Place	2	2	3	2	0.2	1	6	28.8 Low		Advise residents of the need to maintain an adequate defensible space around their dwelling. No outer zone required in the reserve.
Old limekiln site	5	2	3	0	3	1	1	0 Minimal	May be damaged by vehicle movements during bushfire management or suppression, and establishment of fire control lines.	Ensure that the TFS is aware of the location of the site and its importance. Do not take vehicles off existing trails, except if there is a threat to crew safety. Only use existing trails and tracks for fire control lines, or use wet lines.
Perimeter and internal fences	-	-	-	-	-	-	-	Variable		Replace if damaged by bushfire.

1 – Note that the risk analysis score in column E only indicates that there is enough space to provide a defensible space between bushland in the reserve and an adjoining asset. It does not indicate that a defensible space has been established on the adjoining property, or if established is being adequately managed.

3. Bushfire Management Issues

3.1 Existing Bushfire Management

3.1.1 Implementation of the Previous Bushfire Management Plan

As part of this revision of the bushfire management plan, a review of the success of the implementation of the previous plan was carried out. The review found that of eighteen recommendations; twelve have been fully implemented, five have been partly implemented, and one has not been implemented. A community bushfire awareness program was previously recommended but only partially implemented. This was previously deemed a high importance. It is evident through the review process that development of a community bushfire awareness program is still a high priority and will play a pivotal part in the ongoing holistic management of Mortimer Bay Coastal Reserve.

The full findings of the review are in Appendix A.

3.1.2 Planned Burning

The previous bushfire management plan recommended planned burns in five Vegetation Management Units (VMU) in the reserve, with VMU 4 to be burnt twice. These have all been successfully carried out. VMU 4 had an additional burn in 2013 to assist with the trial management of *Parentucellia viscosa*.

Pre/post burn monitoring plots were established in 2012 in VMU 2, 4 and 8 to gather data on planned burning within the reserve.

An amended burning schedule for the next 5 years has been included in this plan (see table 9).

3.1.3 Vehicle Access Routes and Foot Tracks

There are 4 vehicle access points into the reserve, all controlled by locked gates. Unauthorised use of the fire trails by trails bikes and 4WD vehicles is rare. The location of the vehicle trails giving access to the reserve that are considered necessary for bushfire management are shown in figure 5, and described in Table 8. Each fire trail has been assigned a usage class and its current condition assessed against the standard for their assigned usage class in MP 1 in the *Clarence City Council Bushfire Management Strategy – Best Management Practice Guidelines*. As the reserve is low lying, some sections of the fire trail system can become boggy after rain restricting access by fire brigade vehicles. One northern section of MB1 is submerged after periods of significant rainfall and remains submerged for extended periods. It is not economically viable to make this section all weather trafficable. During these periods vehicle access is not desired.

During the duration of the previous BMP MB2, MB5 and MB7 had extensive upgrading to allow all weather access to meet the desired vehicle usage class. Fire trails in the reserve are at a good standard at time of review.

In addition to the fire trails in the reserve there are a number of informal foot tracks. These are not maintained other than by regular usage. VMU 8 has an informal foot track that was temporarily re-established as vehicle access for a planned burn in 2013.

In November 2015 MB1, MB2, MB3 and MB4 were identified under the Hobart Fire Protection Plan as strategic fire trials.

Figure 5 – Vehicle and foot access

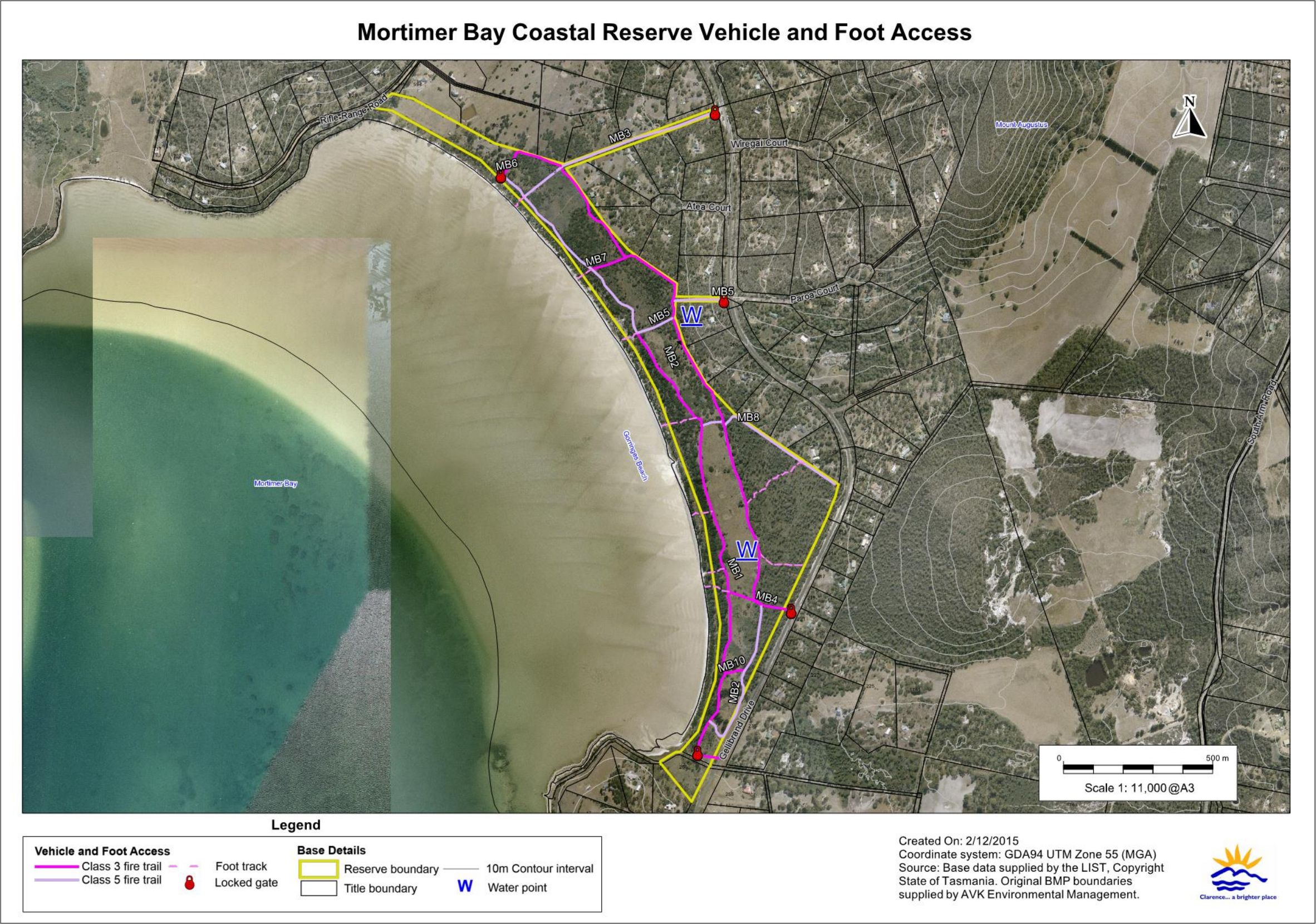


Table 8 - Condition and maintenance of fire trails in the reserve

Assigned vehicle usage class (see MP 1):	Maintenance priority:
Class 1 – all 2WD and 4WD vehicles	High priority - major through routes and fire control lines
Class 3 – all weather 4WD, light and heavy 4WD vehicles (category 3, 4 & 5 tankers)	Medium priority - important access and escape routes and minor fire control lines
Class 5 – dry weather and/or high clearance 4WD, light 4WD (category 5 tankers), also includes trails with sharp bends and dead end trails with small turning areas.	Low priority - minor access routes and boundaries of vegetation management units.

The trail usage class describes the suitability of the fire trail if properly maintained, not necessarily its condition at the time of inspection.

***MP refers to Management Procedures in Clarence City Council Bushfire Management Strategy – Best Management Practice Guidelines**

FIRE TRAIL ID	USAGE CLASS	STRATEGIC FIRE TRAIL UNDER HOBART FIRE PROTECTION PLAN ¹	MAINTENANCE PRIORITY	LOCATION AND CONDITION AT NOVEMBER 2015	ACTION REQUIRED	MANAGEMENT CONSTRAINT
MB1	3/5	YES	High	<p>Runs the length of the reserve from Priscilla Park Entrance (Opposite 235 Gellibrand Drive, Sandford) running along the western boundary to the junction MB3.</p> <p>The section of the trail from the southern end of the reserve to MB5 should be maintained to usage class 3 specifications, the rest to usage class 5.</p> <p>Trail currently meets usage class 3 standard and class 5 standard from MB5 north.</p>	<p>Restrict vehicle usage when northern section is submerged.</p> <p>Inspection and maintenance as specified in MP2.</p> <p>Erect strategic fire trail signage.</p>	<p>JCN MB1 & MB5 heading north can be submerged for extended periods.</p> <p><i>Cynoglossum austral</i>³ & <i>Acianthus caudatus</i>³ adjacent to fire trail in sections –Check for threatened flora prior to maintenance.</p>

FIRE TRAIL ID	USAGE CLASS	STRATEGIC FIRE TRAIL UNDER HOBART FIRE PROTECTION PLAN ¹	MAINTENANCE PRIORITY	LOCATION AND CONDITION AT NOVEMBER 2015	ACTION REQUIRED	MANAGEMENT CONSTRAINT
MB2	3/5	YES	High	Runs from MB1 partly along the eastern boundary of the reserve to the MB3. The section of the trail from the MB4 to MB3 should be maintained to usage class 3 specifications, the rest to usage class 5. Trail currently meets usage class 3 and class5 standards.	Inspection and maintenance as specified in MP2. Erect strategic fire trail signage.	NO
MB3	5	YES	High	Runs from MB1 to Gellibrand Drive in the northern part of the reserve. Section of the trail running up to Gellibrand Drive has signs of erosion. No remedial work required. Meets usage class 5 standards.	Inspection and maintenance as specified in MP2. Erect strategic fire trail signage.	Contains threatened native vegetation community <i>Eucalyptus tenuiramis</i> forest and woodland on sediments (DTO) ²
MB4	3	YES	High	Runs from MB1 to Gellibrand Drive in the southern part of the reserve. Trail currently meets usage class 5 standards.	Cut back vegetation to MP1 standards. Erect strategic fire trail signage.	NO
MB5	5	NO	Medium	Runs from MB1 to Gellibrand Drive in the middle part of the reserve. Trail currently meets usage class 5 standards.	Inspection and maintenance as specified in MP2.	NO

FIRE TRAIL ID	USAGE CLASS	STRATEGIC FIRE TRAIL UNDER HOBART FIRE PROTECTION PLAN ¹	MAINTENANCE PRIORITY	LOCATION AND CONDITION AT NOVEMBER 2015	ACTION REQUIRED	MANAGEMENT CONSTRAINT
MB6	3	NO	Low	Runs from MB1 to MB3 along the pony club fence and the eastern boundary of the reserve. Trail currently meets usage class 3 standards but has sections that may become boggy when wet.	Inspection and maintenance as specified in MP2.	NO
MB7	3	NO	Low	Links MB1 to MB2 in the middle section of the reserve.	Inspection and maintenance as specified in MP2.	NO
MB8	5	NO	Low	Runs from MB1 passing through MB2 to Gellibrand Drive along the eastern boundary of the reserve. This is a dead end trail as there is no access onto Gellibrand Drive. Turning circle maintained at dead end. Trail is in mostly unformed and runs through a fuel modified buffer zone, may become boggy when wet.	Inspection and maintenance as specified in MP2.	NO
MB10	3	NO	Low	Links MB1 to MB2 in the southern section of the reserve. Trail currently meets usage class 3 standard but has sections that may become boggy when wet.	Inspection and maintenance as specified in MP2.	NO

1 - Strategic fire trails have been identified in the Hobart Fire Protection Plan. Strategic fire trails will be signposted.

2 - *Nature Conservation Act 2002*

3 - *Tasmanian Threatened Species Protection Act 1995*

3.1.4 Water Supply

There are no reliable water sources within the reserve, and water for firefighting and bushfire management has to be obtained from dams and tanks on adjoining properties, or transported to the reserve. There is a small water hole in VMU 4 but it usually dries up during summer. Sea water can be obtained from Mortimer Bay, but only at high tide. Difficulty obtaining water may hamper firefighting operations in the reserve. However, given the relatively low bushfire risk in the reserve, provision of a water supply for firefighting is not considered necessary. It was noted that some of the properties adjoining the reserve have gates in the reserve boundary fence making access to any water supply on these properties easier.

3.1.5 Fuel Breaks and Defendable Spaces

A fuel break (sometimes called a “firebreak”) is a strip of cleared, or partly cleared, bushland constructed and maintained to slow, or stop, the progress of a bushfire to assist in its control. They are not the same as defendable spaces which are maintained around vulnerable assets to protect them from bushfires. Fuel breaks in grassland can be effective in stopping fires if cleared down to mineral earth, but where trees and shrubs are present wind-blown burning embers will usually carry a bushfire across a fuel break. Therefore, in bushland with shrubs and trees the only benefit of a fuel break is to provide access for firefighters and a boundary for back burning operations. Currently there are no standards or guidelines for fuel breaks in Tasmania. There is no fuel breaks maintained in the reserve, nor are any considered necessary.

A defendable space is an area of managed vegetation around an asset likely to be at risk from bushfire that protects it from direct flame contact and intense radiant heat, as well providing an area where fire fighters can defend the asset. The Tasmania Fire Service document *Bushfire Survival Plan 2015-2016* recommends that a defendable space includes two 'zones':

- An inner zone (formerly Bushfire Protection Zone) where flammable materials are minimised.
- An outer zone (formerly Fuel Modified Buffer Zone) where a low level of flammable material is permitted.

In the inner zone, flammable materials on, under and around your home buildings should be removed.

In the inner zone:

- Include non-flammable areas such as paths, driveways, and mowed lawns.
- Use non-flammable mulch, do not use woodchips or bark.
- Locate any dams, orchards, vegetable gardens and any effluent disposal areas on the fire-prone side of the home.
- Use radiation shields and windbreaks such as stone or metal fences and hedges using low-flammability plants.
- Remove fire hazards such as wood piles, rubbish heaps and stored fuels.

- Replace all highly-flammable plants with low-flammability plants.
- Prune lower branches on trees and remove flammable shrubs from under and between trees.
- Rake up bark and leaves and keep roofs and gutters clear of flammable debris.

The TFS notes that it is not necessary to remove all vegetation from the inner zone. Individual trees rarely cause houses to burn in bushfires.

Trees can screen a building from windblown embers while protecting it from radiant heat. Smooth barked trees are less likely to catch fire than those with rough bark. No tree should be able to fall on the building.

In the outer zone, small-sized natural fuels (such as leaf litter, bark, sticks, tussocks and some shrubs) should be removed and larger fuels (trees and shrubs) should be cut back to reduce the intensity of an approaching bushfire.

Natural fuels, both on the ground and between the ground and any larger trees, should be reduced by selective removal of vegetation, both horizontally and vertically, followed by ongoing maintenance.

In the outer zone:

- Retain established trees to trap embers and reduce wind speeds.
- Selectively remove small trees and shrubs to create clumps (rather than a continuous wall of trees) separated by open areas.
- Remove the vegetation between the ground and the bottom of the tree canopy, to a height of at least two metres.
- Minimise fine fuels at ground level, such as grasses and leaf litter.

Currently there is a 5-10m wide outer zone maintained along the reserve boundary with adjoining residential developments on 226, 234 and 240 Gellibrand Drive. This outer zone is considered adequate to provide access along the reserve boundary and supplement the defensible space maintained by adjoining residents. This outer zone is a dead end with turning circle and identified as VMU 15. An additional outer zone is required as detailed in table 7. These outer zones are wide enough to meet TFS requirements for an outer zone.

The existence and adequacy of defensible spaces on individual lots adjoining the reserve was not surveyed as part of this bushfire management plan. Nevertheless, it must be stressed that establishment and maintenance of defensible spaces around dwellings bordering the reserve is essential for bushfire protection. Clarence City Council and individual landowners need to co-operate to provide and maintain adequate bushfire protection.

3.1.6 Bushfire Detection and Suppression

Mortimer Bay Coastal Reserve is visible from surrounding properties and roads, and it is likely that any fires would be promptly reported. Fires are most likely to start in the reserve itself though large fires in bushland on private property to the north of Rifle Range Road that could run or spot into the reserve.

The good network of fire trails in the reserve and access from a number of points means that it should be relatively easy to control fires in the reserve under most conditions. However, it should be noted that firefighting could be hampered by boggy sections of fire trails after recent heavy rain and lack of water after prolonged dry spells.

3.2 Weeds

Environmental weeds occur throughout the reserve and are a key management issue affecting its natural values (see figure 6). While much primary weed control work has been undertaken by Councils Fire and Bushland Crew and the Mortimer Bay Coastcare Group to control large weed infestations, follow-up maintenance activities will be required for many years. Several weed species found in the reserve are classified as declared weeds under the Tasmanian *Weed Management Act 1999* and/or Weeds of National Significance (WONS). Where possible these weeds will be targeted as a priority to prevent their further spread (Tasflora, July 2012).

Serrated tussock (*Nassella trichotoma*) and blackberry (*Rubus fruticosus*) are present declared weeds and WONS. The only declared weed in the reserve that is not listed as a WONS is Spanish heath (*Erica lusitanica*).

Other environmental weeds present: yellow glandweed (*Parentucellia viscosa*), radiata pine (*Pinus radiata*), sweet briar (*Rosa rubiginosa*).

Weeds within the reserve are largely under control or being progressively removed (pines).

During 2013 yellow glandweed (*Parentucellia viscosa*) became evident for the first time post a planned burn in VMU 4. Several techniques were trialled for eradication in targeted areas. Very limited sightings have occurred since. VMU 4 has 2 monitoring plots established by Council Fire and Bushland Management which will be used to monitor any further occurrences.

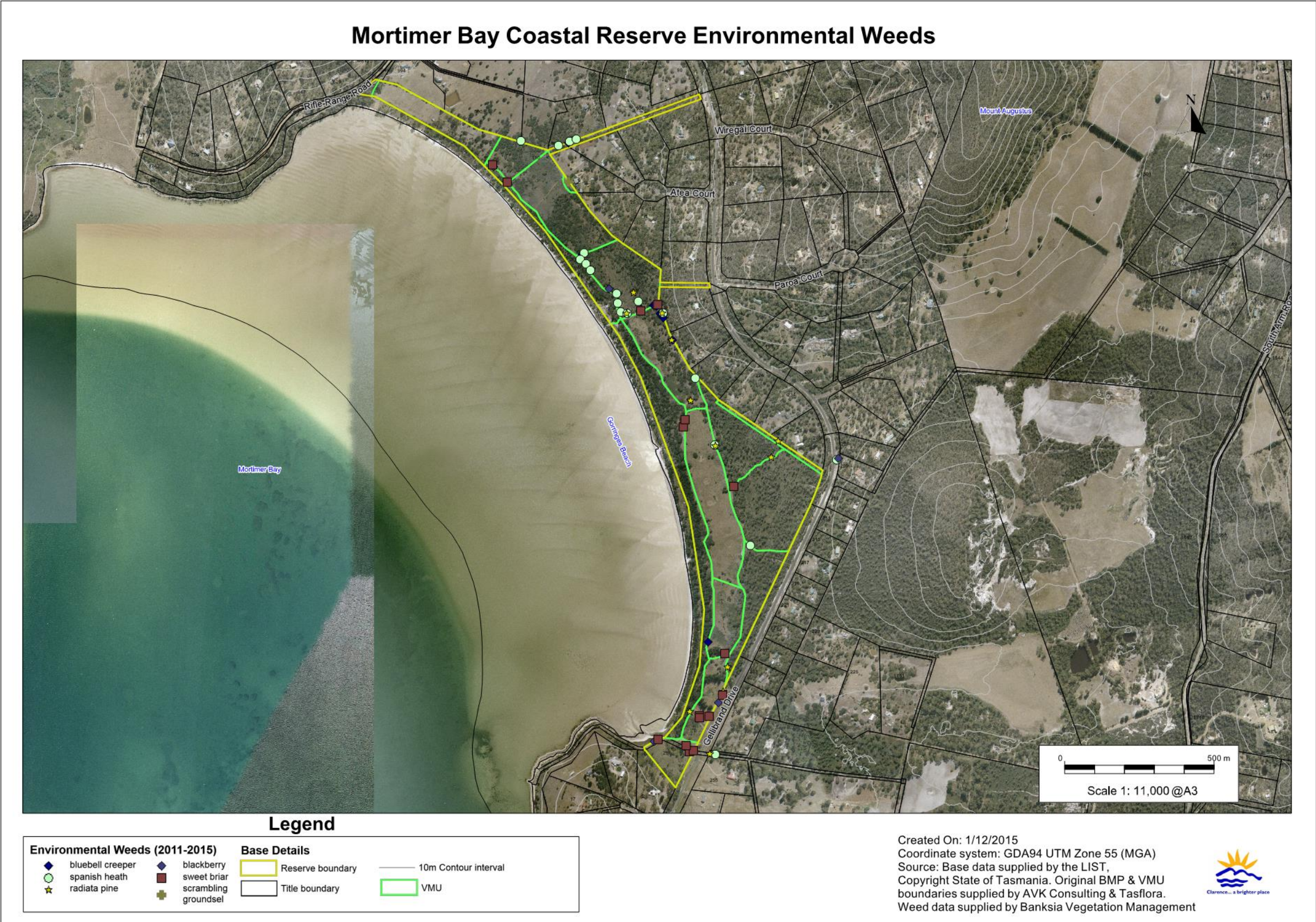
Bracken fern (*Pteridium esculentum*), although a native plant, is a concern in the reserve as it has come to dominate some sections of the reserve. It is a greater bushfire hazard than most other understorey species and at high density can exclude other native species. As bracken recovers faster than other understorey species after bushfire, it can quickly dominate areas that are burnt frequently. It also builds up an elevated fuel load in 2 to 3 years, thus making burning an ineffective method of hazard reduction. Bracken control is therefore an important component of bushfire management in the reserve.

3.3 Stakeholder and Community Concerns

At the commencement of the project Clarence City Council sent a letter to all landowners adjoining the reserve and to other stakeholder groups informing them that the Bushfire Management Strategy was being revised and inviting them to have input into the revised plan for the reserve by sending in a written submission, attending a community “walk and talk” in the reserve, or by contacting the reviewer directly. The community “walk and talk” was held in the reserve on 15th November 2015 and was attended by 2 community members and a Council representative. In addition, 2 written comments were received.

The main community concerns about bushfire management in the reserve expressed during the walk and talk are summarised in Appendix B along with the Councils’ response.

Figure 6 - Environmental weeds in reserve



4. Plan Implementation

To ensure that the recommendations in this plan are fully implemented, Clarence City Council will ensure that TFS brigades likely to attend bushfires within the reserve are familiar with the plan, and its contents are registered on the TFS communication system.

4.1 Bushfire Risk Reduction Strategy

The overall bushfire risk reduction strategy recommended for the reserve can be summarised as follows:

- Reduce ignitions through prosecution of arsonists, and prompt reporting of fires.
- Maintain access points and fire trails to enable the TFS to rapidly contain fires that start in the reserve, and ensure the TFS are familiar with the location and condition of fire trails in the reserve.
- Maintain outer zones in the reserve to complement defensible spaces on adjoining properties.
- Carry out strategic planned burning to reduce bushfire hazards in the reserve
- Encourage neighbouring residents to maintain defensible spaces around their homes.

4.2 Community Education, Awareness and Involvement

To ensure successful implementation of this bushfire management plan it will be necessary to inform key sectors of the community about bushfire management issues in the reserve. This should include surrounding residents and those with special interests in the reserve, or whose activities can affect assets within the reserve. The community education process is detailed in section 5.7 of *Clarence City Council Bushfire Management Strategy for Council Owned and Controlled Land*. This was not implemented during the previous BMP, and is a pivotal factor in the effectiveness of this BMP.

In particular, adjoining residents should be advised that dumping garden waste and other rubbish in reserves increases the bushfire hazard and makes firefighting along the bushland/urban interface more difficult and dangerous for fire fighters. It also contributes to the spread of weeds. Residents should also be advised that they are not authorised to remove vegetation in a Council reserve, even if it is recommended in the BMP. If residents have any concerns about the bushfire hazard in the reserve near their home, they should be encouraged to contact Council's Fire and Bushland Vegetation Management Co-ordinator.

4.2.1 Planned Burning

The native plant communities in the reserve are considered dependent on bushfire to maintain their structure and floristics in the long term. Periodic burning will help to maintain diversity in the understorey, and allow bushfire dependent species to germinate and establish. However, there is a need to minimise damage to important habitat elements (such as dead trees, old logs and stumps) during these burns, and to ensure adequate retention of unburnt patches of each forest type to act as refugia for recolonisation of burnt areas.

The approach adopted in this plan is to use planned burning equally for asset protection and habitat management.

4.2.2 Vegetation Management Units (VMU)

The planned burning program in this plan is based on the division of the dry forest and grassland habitats into a mosaic of VMUs (see figure 7). VMUs can be burnt at a frequency, season and intensity that are optimal for the plant communities within each unit or excluded from bushfire if the vegetation does not require burning or the VMU is being managed by other means. The bushfire management requirements of the vegetation communities within the reserve are given in table 6.

The previous bushfire management plan divided the reserve into 16 VMUs based on the vegetation types in the reserve, and the presence of suitable control lines in the form of fire trails and foot tracks. During the review process VMU boundaries have been adjusted to suit most current land tenure boundaries/actual BMP boundary. VMU 11 had the most significant reduction in size. VMU 11 decreased from 7.1^{ha} to 2.0^{ha}.

The revised VMU structure allows for implementation of the most appropriate methods for asset protection and managing bushfire hazard whilst promoting biodiversity.

4.2.3 Planned Fire Regimes

Planned burning operations should be carried out following the seed-setting period of native species and after the nesting period of the understorey bird species in the reserve. Where possible hollow logs and dead trees should be protected from bushfire due to their fauna habitat value. This can be achieved by using wet lines around the tree or log, or raking fine fuels away from logs or the base of hollow trees, and rapidly extinguishing fires at these points should they occur.

This bushfire management plan covers a 5-year period, after which another review is recommended. Burns within the reserve have been scheduled in table 9. To allow for flexibility in budgeting and planning, and for unfavourable weather, the burns can take place in the year following that recommended in table 9, if required. If a bushfire burns more than half of a VMU, the whole of the VMU should be considered to have been burnt and the schedule adjusted accordingly. In order to create a mosaic of native bushland with different bushfire histories, VMUs should generally not be burnt within 2 years of adjoining VMUs.

Figure 7 - Vegetation management units in the reserve

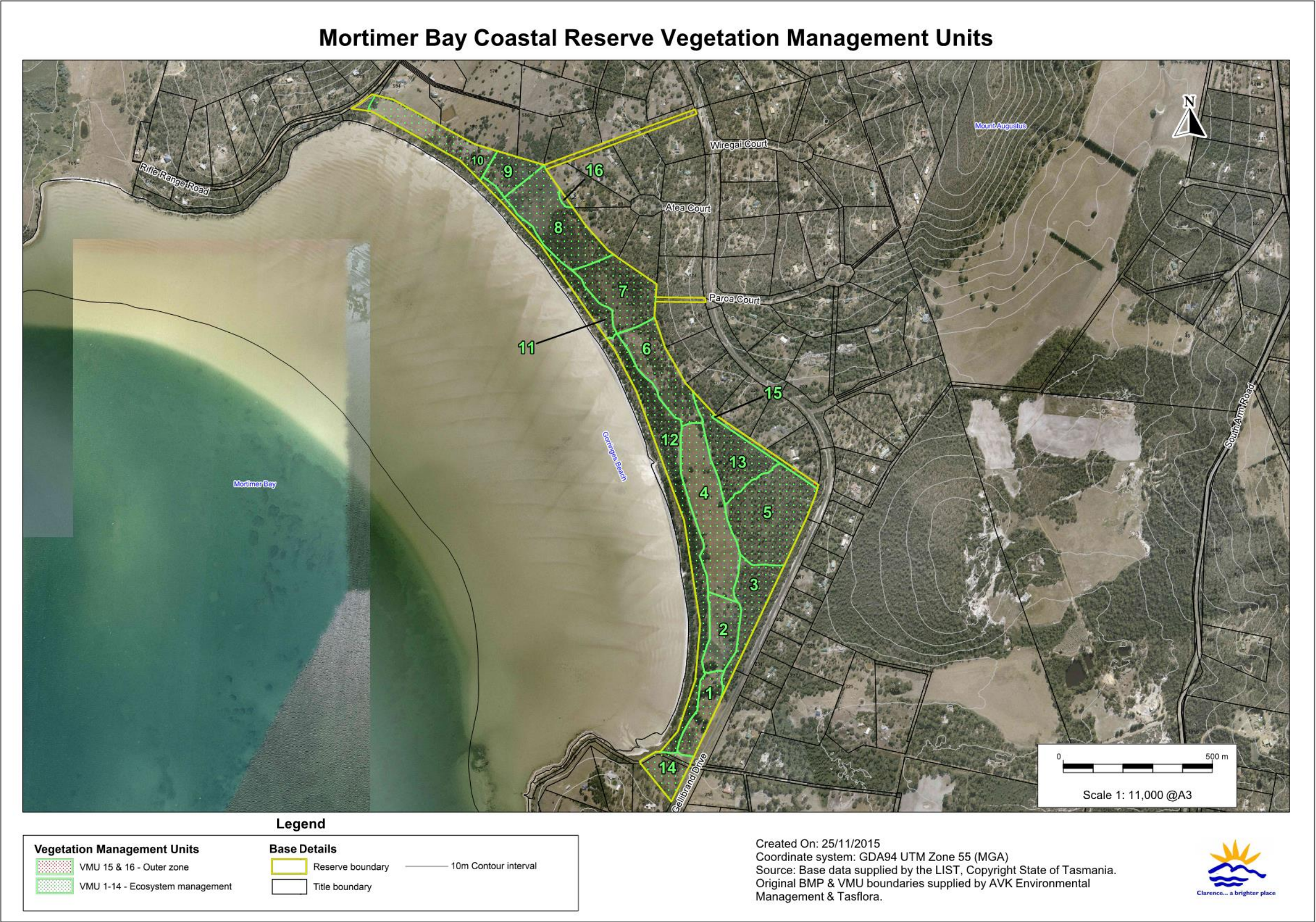


Table 9 – Bushfire management in the reserve

VMU ¹	AREA (ha)	BUSHFIRE MANAGEMENT OBJECTIVES and PRESCRIPTIONS	NOTES and PRECAUTIONS ^{2, 3, 4}	LAST BURNT	NEXT BURN
1 FRG	2.0	OBJECTIVES: Maintain structure of established planted vegetation. Reduce the extent and density of weeds. PRESCRIPTION: Exclude fire duration on plan.	Protect interpretation sign from damage. Protect perimeter fence during burns. Contains the rare plant species <i>Cynoglossum austral</i> ⁴ . Obtain a permit from DPIPWE Threatened Species Section before burning. Contains non threatened flora of conservation significance <i>Acianthus caudatus</i> ⁴ . Avoid burning during seed setting period.	2000 (part)	Assess next plan
2 GCL	2.4	OBJECTIVES: Maintain as grassland with scattered shrubs. Reduce the extent and density of weeds, particularly bracken. PRESCRIPTION: Autumn burn every 3 to 5 years.	Do not burn during the bird nesting/seed setting period. Maintain structure of established planted vegetation.	2013	Assess next plan
3 DAC DVC	3.0	OBJECTIVES: Maintain the structure and floristics of the vegetation community. Reduce the extent and density of weeds, particularly bracken. PRESCRIPTION: Autumn or spring burn every 15 to 25 years.	Protect perimeter fence during burns. Consult DPIPWE Threatened Species Section before burning. Contains DVC ²	2001	2017
4 GCL	6.2	OBJECTIVES: Maintain as grassland with scattered shrubs. Reduce the extent and density of weeds, particularly bracken. PRESCRIPTION: Autumn burn every 3 to 5 years.	Do not burn during the bird nesting/seed setting period. Maintain structure of established planted vegetation. Contains the rare plant species <i>Cynoglossum austral</i> ⁴ . Obtain a permit from DPIPWE Threatened Species Section before burning. Contains vegetation monitoring plots VMP001 & VMP002. Ensure measured prior to burning.	2015	2019
5 DAC	6.9	OBJECTIVES: Maintain the structure and floristics of the vegetation community. Reduce the extent and density of weeds, particularly bracken. PRESCRIPTION: Autumn or spring burn every 15 to 15 years.	Protect adjoining property during burns. Protect perimeter fence during burns.	2012	Assess next plan

VMU ¹	AREA (ha)	BUSHFIRE MANAGEMENT OBJECTIVES and PRESCRIPTIONS	NOTES and PRECAUTIONS ^{2, 3, 4}	LAST BURNT	NEXT BURN
6 DOW DVC	3.9	<p>OBJECTIVES:</p> <p>Maintain the structure and floristics of the vegetation community.</p> <p>Reduce the extent and density of weeds, particularly bracken.</p> <p>PRESCRIPTION:</p> <p>Autumn or spring burn every 15 to 25 years.</p>	<p>Protect adjoining property during burns.</p> <p>Protect perimeter fence during burns.</p> <p>Consult DPIPWE Threatened Species Section before burning. Contains DVC²</p> <p>Contains the rare plant species <i>Cynoglossum austral</i> ⁴. Obtain a permit from DPIPWE Threatened Species Section before burning.</p> <p>Contains potential habitat for Southern brown tree frog (<i>Litoria ewingii</i>⁴). Exclude fire around significant areas of sitting water within VMU.</p>	2007	<p>Assess next plan</p> <p>New section of VMU previously unburnt to be burnt 2017</p>
7 DOW	4.2	<p>OBJECTIVES:</p> <p>Maintain the structure and floristics of the vegetation community.</p> <p>Reduce the extent and density of weeds.</p> <p>PRESCRIPTION:</p> <p>Autumn or spring burn every 15 to 25 years.</p>	<p>Protect adjoining property during burns.</p> <p>Protect perimeter fence during burns.</p> <p>Trial patch burning 2019. Establish monitoring plot pre burn, then measure annually to collect data on bracken response to patch burning.</p>	2008	2019 Patch burn only
8 DVC	5.3	<p>OBJECTIVE:</p> <p>Maintain the structure and floristics of the vegetation community.</p> <p>Reduce the extent and density of weeds.</p> <p>PRESCRIPTION:</p> <p>Autumn or spring burn every 15 to 25 years.</p>	<p>Burn following the end of the bird nesting/seed setting period.</p> <p>Protect adjoining property during burns.</p> <p>Protect perimeter fence during burns.</p> <p>Consult DPIPWE Threatened Species Section before burning. Contains DVC²</p> <p>Contains vegetation monitoring plot VMP100. Ensure measured prior to burning.</p>	2013	<p>Assess next plan</p> <p>New section of VMU previously unburnt to be burnt 2017</p>
9 DVC	1.6	<p>OBJECTIVE:</p> <p>Maintain the structure and floristics of the vegetation community.</p> <p>Reduce the extent and density of weeds.</p> <p>PRESCRIPTION:</p> <p>Autumn or spring burn every 15 to 25 years.</p>	<p>Protect adjoining property during burns.</p> <p>Protect internal and perimeter fence during burns.</p> <p>Consult DPIPWE Threatened Species Section before burning. Contains DVC²</p>	2010	2025
10	3.3	<p>OBJECTIVE:</p> <p>Leased to pony club, maintain as required for pony club activities.</p> <p>PRESCRIPTION:</p> <p>Exclude fire.</p>		Not known	No burning

VMU ¹	AREA (ha)	BUSHFIRE MANAGEMENT OBJECTIVES and PRESCRIPTIONS	NOTES and PRECAUTIONS ^{2, 3, 4}	LAST BURNT	NEXT BURN
11 DVC	2.0	<p>OBJECTIVE:</p> <p>Maintain the structure and floristics of the vegetation community.</p> <p>PRESCRIPTION:</p> <p>No burning for the duration of this plan.</p>	<p>Protect internal fence during burns.</p> <p>Protect historic limekiln site.</p> <p>Contains non threatened flora of conservation significance <i>Pterostylis alta</i> ⁴ and <i>Pterostylis williamsonii</i> ⁴. Avoid burning during seed setting period.</p> <p>Consult DPIPWE Threatened Species Section before burning. Contains DVC²</p> <p>Exclude all fire in sand dunes.</p>	Not known	No burning
12 FPL	6.6	<p>OBJECTIVE:</p> <p>Removal of pine trees and replacement with indigenous species.</p> <p>PRESCRIPTION:</p> <p>No burning for the duration of this plan.</p>	<p>Contains the rare plant species <i>Lepilaena preissii</i> ⁴. Obtain a permit from DPIPWE Threatened Species Section before burning.</p> <p>Contains the rare plant species <i>Cynoglossum austral</i> ⁴. Obtain a permit from DPIPWE Threatened Species Section before burning.</p> <p>Vulnerable species <i>Sterna nereis</i> ^{3, 4} known to have breed on the southern spit historically.</p> <p>Exclude all fire in sand dunes.</p>	Not known	No burning
13 DAC	3.8	<p>OBJECTIVES:</p> <p>Maintain the structure and floristics of the vegetation community.</p> <p>Reduce the extent and density of weeds, particularly bracken.</p> <p>PRESCRIPTION:</p> <p>Autumn or spring burn every 15 to 25 years.</p>	<p>Burn following the end of the bird nesting/seed setting period.</p> <p>Protect perimeter fence during burns.</p> <p>Protect adjoining property during burns.</p>	2001 (part)	2017
14 GHC DVC	1.6	<p>OBJECTIVES:</p> <p>Maintain the structure and floristics of the vegetation community.</p> <p>Reduce the extent and density of weeds.</p> <p>PRESCRIPTION:</p> <p>No burning for the duration of this plan.</p>	<p>Protect adjoining property during burns.</p> <p>Protect perimeter fence during burns.</p> <p>Consult DPIPWE Threatened Species Section before burning. Contains DVC²</p> <p>Contains the rare plant species <i>Cynoglossum austral</i> ⁴. Obtain a permit from DPIPWE Threatened Species Section before burning</p>	Not known	Assess next plan
15 DAC	0.5	<p>OBJECTIVE:</p> <p>Maintain as an outer zone to protect adjoining dwellings.</p> <p>PRESCRIPTION:</p> <p>See specifications for outer zones in MP 5 in the Best Management Practices Guidelines.</p>	<p>Protect adjoining property if burning is used to maintain the fuel modified buffer zone.</p> <p>Protect perimeter fence during burns.</p>	Not known	Pile burn as required

VMU ¹	AREA (ha)	BUSHFIRE MANAGEMENT OBJECTIVES and PRESCRIPTIONS	NOTES and PRECAUTIONS ^{2, 3, 4}	LAST BURNT	NEXT BURN
16 DVC	0.2	<p>OBJECTIVE:</p> <p>Maintain as an outer zone to protect adjoining dwelling.</p> <p>PRESCRIPTION:</p> <p>See specifications for outer zones in MP 5 in the Best Management Practices Guidelines.</p>	<p>Protect adjoining property if burning is used to maintain the outer zone.</p> <p>Protect perimeter fence during burns.</p> <p>Consult DPIPWE Threatened Species Section before burning. Contains DVC²</p>	1999	As required

¹ TASVEG 3.0 codes of vegetation types in the unit.

² *Nature Conservation Act 2002*

³ *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

⁴ *Tasmanian Threatened Species Protection Act 1995*

4.2.4 Preparation and Supervision

The VMUs scheduled for fuel reduction burning should be inspected some months before the proposed burn to check that the scheduling and burn prescriptions are still appropriate, and to determine whether weeds are present that require treatment before burning. Where treatment of weeds is required, it should be carried out at least 3 months in advance of the burn to allow treated weeds to desiccate. Disturbance of the treated infestations (by mechanical means, slashing or burning) within this period may reduce the herbicide's effectiveness, and regeneration from rootstock is likely to occur.

Successful implementation of the planned burns in this plan requires trained personnel and special equipment. Each planned burn recommended in this plan must have a burn plan prepared by someone who has completed the Forestry Tasmania "Develop Prescribed Burning Plans" course or equivalent. All persons engaged in planned burning or firefighting in the reserve must have completed the Forestry Tasmania "Forest Fire Fighting" course or equivalent.

If the planned burning is contracted out, the contractor must be able to meet the required training accreditation in the previous paragraph, as well as provide evidence of experience in carrying out broadscale low intensity fuel reduction burns.

4.3 Bushland Management

Bushfire can provide the disturbance that many introduced species need to spread to new areas, as well as to expand existing populations. Other bushfire management activities, such as construction and maintenance of fire trails, and bulldozing of fuel breaks during bushfire suppression, can also provide opportunities for weeds to colonise native bushland. Fire can also be used as a tool to manage weed infestations. Some species are best controlled by herbicide application to regrowth following a bushfire. Other species can sometimes be controlled by the application of a fire regime that stimulates germination of seed but kills the regrowth before it has been able to flower.

The planned burning recommended in this plan can assist a weed control program, and it is recommended that weed control activities be integrated with the management burning program in this plan. MP 8 in *Clarence City Council Bushfire Management Strategy – Best Management Practice Guidelines* includes guidelines for integrating weed management with management burning, and for minimising the risk of weed invasion following bushfires. These guidelines should ensure that fires in the reserve do not worsen existing weed problems, or cause weeds to spread.

It should be noted that bush regeneration plantings in previously cleared areas might increase the bushfire hazard. Any proposals for bush regeneration in the reserve should be considered in the context of this bushfire management plan to ensure that they do not compromise bushfire protection measures proposed in this plan. In general, plantings should not be allowed:

- on inner and outer zones established around assets at risk
- on fuel breaks
- within 2 m of the edge of fire trails.

The bush regeneration planting program being carried out in the reserve needs to be coordinated with the burning program so that planting in areas scheduled for burning takes place after the burn thereby making the burn easier for the fire crew and ensuring new plantings are not damaged by bushfire.

4.3.1 Control of Bracken (*Pteridium esculentum*)

Where indicated in table 9, control of bracken should be undertaken after burns by cutting off the heads of the bracken annually in summer. Heads should be cut just below the lowest frond on each stem. This can be done with a brushcutter or a vehicle mounted slasher if it can be set high enough. Cutting of the heads should continue each year until regenerating native shrubs and trees reach the height of the bracken heads and then discontinued. It should be noted that this method of control will fail if it is not carried out consistently.

5. Bushfire Management Recommendations

The management actions recommended to meet the objectives of the plan in section 1.3 have been summarised and classified using the following criteria:

- URGENT** - Actions required to reduce a very high risk to life or property.
- ESSENTIAL** - Actions required to improve safety, or inadequate bushfire protection measures in high risk areas.
- Actions that are essential for control & suppression of bushfires, and/or conservation of threatened species.
- RECOMMENDED** - Actions required to improve inadequate bushfire protection measures in moderate risk areas.
- Actions required to ensure on-going effective bushfire management, or conservation of biodiversity.
- ROUTINE** - Maintenance of bushfire control resources and protection measures.

Urgent actions need to be undertaken as soon as possible.

Where applicable the desirable timing of other actions has been coded as follows:

- A - Inspect and maintain annually, or as specified in the relevant MP
- A/S - Timing as specified in the bushfire management plan
- 1, 2, etc - Carry out action within the time period specified (years)
- 1A, 2A etc - Construct within the next 1, 2 etc years and then inspect and maintain annually, or as specified in the relevant MP.

Management actions have been linked to generic MP's in *Clarence City Council Bushfire Management Strategy – Best Management Practice Guidelines*. Performance indicators have also been provided for each management action. These should be used to determine if the specific objectives of this bushfire management plan have been achieved. They should be monitored when the plan is revised every 5 years. Where performance targets are not being achieved, a review of the relevant portion of the plan should be undertaken.

5.1 Management Action Summary

RECOMMENDED ACTION	OBJECTIVE (section 1.3)	PRIORITY	RESPONSIBILITY	PERFORMANCE INDICATORS
1) Develop/commence a communication strategy for the Mortimer Bay Coastcare Group, local TFS brigades and appropriate Clarence City Council staff.	1, 2, 3, 4	ROU - A	Clarence City Council Fire and Bushland Management Tasmanian Fire Service	Compliance with section 4.3 eg: location of plantings. Local TFS brigades familiar with bushfire management assets in the reserve.
2) Develop/commence a community education program, including an information sheet, as outlined in section 5.7 of the Bushfire Management Strategy, to inform the community of bushfire management issues in the reserve and to ask them to report any smoke, or suspicious activity, on days of total fire bans to the police.	1, 2	REC - 1	Clarence City Council Fire and Bushland Management Tasmania Fire Service	Educational material distributed to adjoining residents, reserve users and other interest groups. Minimal occurrences of illegal fires on and around the reserve.
3) Implement the bushfire protection measures in section 2.4 for protection of assets in and around the reserve.	1, 4	E	Clarence City Council Fire and Bushland Management Private landowners	Bushfire protection measures for adjoining dwellings implemented and maintained. No assets lost to fires originating in, or moving through, the reserve.
4) Erect appropriate signs for Strategic Fire Trails as identified in Table 8.	1, 4	REC - A	Clarence City Council Fire and Bushland Management	Signs erected.
5) Ensure all fire trails shown on figure 5 are inspected and maintained in a trafficable condition at all times according to table 8 and MP 2.	2, 4	ROU - A	Clarence City Council Fire and Bushland Management	Vehicle access routes inspected as required in MP 2, and maintained in a trafficable condition for fire service vehicles.

RECOMMENDED ACTION	OBJECTIVE (section 1.3)	PRIORITY	RESPONSIBILITY	PERFORMANCE INDICATORS
6) Treat any weeds in areas to be burnt under this bushfire management plan according to MP 8. Ensure follow-up weeding is carried out after planned burns and bushfires.	3, 5	REC – A/S	Clarence City Council Landcare Group	Pre- and post-fire weed control carried out in any weed infested VMUs burnt under this plan. Minimal coppicing or regrowth of weeds from treated rootstock. All declared weeds or WONS removed. Reduction in extent of other weeds.
7) Carry out vegetation monitoring as detailed in section 5.10 of the Bushfire Management Strategy including the recovery of any populations of threatened or rare flora and fauna burnt by bushfires or planned burns.	3, 5	E	Clarence City Council Fire and Bushland Management DPIPWE Threatened Species Section	Vegetation monitoring plots set up and surveyed and data on the population size and extent of threatened species recorded before planned burns. Regular follow-up surveys undertaken.
8) Consult with the DPIPWE Threatened Species Section when carrying out bushfire management activities that may affect populations of threatened flora or fauna.				
9) Coordinate bushfire management, weed management and other management activities, such as bush regeneration, using the procedure in MP 9.	3, 5	REC - A	Clarence City Council Landcare Groups	Meetings held as recommended in MP9 and the outcomes recorded.
10) Ensure all personnel engaged in planned burning activities in the reserve have the appropriate level of training and equipment as outlined in the bushfire management policy, and the minimum equipment listed in MP 7.	1, 2	E	Clarence City Council Fire and Bushland Management Tasmania Fire Service	All personnel are able to demonstrate the required level of training and minimum levels of equipment.

RECOMMENDED ACTION	OBJECTIVE (section 1.3)	PRIORITY	RESPONSIBILITY	PERFORMANCE INDICATORS
11) Erect appropriate signs on tracks and roads to warn reserve users of planned burns.	1	E	Clarence City Council Fire and Bushland Management Tasmania Fire Service	No users of the reserve injured by planned burns.
12) Carry out planned burning according to the schedule in table 9 using the procedure in MP 7.	2, 3, 4, 5	E - A/S	Clarence City Council Fire and Bushland Management	Mosaic of burnt VMUs maintained. No decline in the structure and floristics of the native vegetation in the reserve.
13) Avoid burning the whole of any population of a threatened or rare plant species in a single fire.	3	E	Clarence City Council Fire and Bushland Management	All planned burns carried out according to the requirements of threatened flora and fauna. No decline in the populations of threatened, rare or vulnerable flora and fauna due to fire.
14) Implement the recovery procedures in MP 12 following planned burns and bushfires.	1, 5, 6	E	Clarence City Council Fire and Bushland Management	Post-fire recovery carried out after planned burns and bushfires. No users of the reserve injured by fires or the effects of fires.
15) Record bushfire management activities and bushfires using the procedures in MPs 10 and 11.	3, 4, 5	REC - A/S	Clarence City Council Fire and Bushland Management	Records maintained of all bushfire management activities.
16) Regularly revise burning schedules and prescriptions to ensure they incorporate the most recent information on the fire ecology of flora, fauna and plant communities of conservation value in the reserve.	3, 5	REC - A/S	Clarence City Council Fire and Bushland Management	Bushfire management plan revised every 5 years.

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Appendix A

Implementation of the previous bushfire management plan

The following codes have been used in assessing implementation of the previous Bushfire Management Plan for Mortimer Bay Coastal Reserve:

IS – Implemented successfully

PI – Partly implemented

NI – Not implemented

NA – Not applicable (to be implemented at a later time, or dependent on another incident or action).

RECOMMENDED ACTION	CODE	COMMENT
1) Develop a community education program, including an information sheet, as outlined in section 5.7 of the Bushfire Management Strategy, to inform the community of bushfire management issues in the reserve and to ask them to report any smoke, or suspicious activity, on days of total fire bans to the police.	PI	A formalised community education program has not been designed. Public exhibition of Councils <i>Bushfire Management Strategy for Council Owned and Controlled Land</i> , <i>Bushfire Management Strategy Best Management Practice Guidelines</i> and the previous BMP for the park has taken place. Various TFS community bushfire preparation events have been attended and represented by Council Fire and Bushland Management throughout municipality.
2) Implement the bushfire protection measures in section 2.4 for protection of assets in and around the reserve.	PI	Measures have been implemented on Council managed land. Some residents manage properties to TFS guidelines, however some do not. Recommend this be included in community education program.
3) Erect appropriate signs on tracks and roads to warn reserve users of planned burns.	IS	At times community has become complacent with warning planned burn hazard signs and entered burn area. Recommend this be included in community education program.
4) Ensure that authorities planning wildfire control operations in the reserve are aware of the location of cultural heritage assets, and ensure they are not damaged by machinery movement or other activities.	IS	Ensure relevant TFS brigades have continued communication with Councils Fire and Bushland Management, access to current BMP and tours of reserve as required.
5) Implement the recovery procedures in MP 12 following planned burns and wildfires.	IS	Mortimer bay Coastal Reserve has 4 monitoring plots established by Council Fire and Bushland Management. These have assisted in post burn weed monitoring/identification.
6) Carry out fire trail repairs and maintenance listed in table 8.	PI	Fire trails have been monitored and maintained as required throughout life of previous BMP. Northern section of MB1 has significant drainage issues and can spend weeks under water. This section is excluded from vehicle usage during these periods.

RECOMMENDED ACTION	CODE	COMMENT
7) Ensure all fire trails shown on figure 5 are inspected and maintained in a trafficable condition at all times according to table 8 and MP 2, and fire trail signs are in place and legible.	PI	Fire trails in good condition. Fire trail signs not implemented. Recommended only strategic fire trails signed next BMP with start/end points stated.
8) Inspect gates regularly to ensure that locks are in place and functioning. Ensure that the local Tasmania Fire Service Brigade and other emergency services have keys to the gates on trails giving access to the reserve.	IS	Locks inspected regularly and actioned as required.
9) Conduct a familiarisation tour of the reserve for local TFS brigades prior to the start of the fire permit period each year.	NI	Familiarisation tour to be recommended in community education program for next BMP.
10) Carry out planned burning according to the schedule in table 9 using the procedure in MP 7.	IS	All burns carried out.
11) Consult with the DPIPW Threatened Species Section when carrying out bushfire management activities that may affect populations of threatened flora or fauna.	IS	Relevant permits gained and stored for reference.
12) Avoid burning the whole of any population of a threatened or rare plant species in a single fire.	IS	Mosaic burning utilised during planned burns.
13) Carry out vegetation monitoring as detailed in section 5.10 of the Bushfire Management Strategy including the recovery of any populations of threatened or rare flora and fauna burnt by wildfires or planned burns.	IS	4 vegetation monitoring plots have been established within reserve since 2012 by Council Fire and Bushland Management. These are re-measured annually.
14) Treat any weeds in areas to be burnt under this bushfire management plan according to MP 8. Ensure follow-up weeding is carried out after planned burns and wildfires.	IS	Fire and Bushland Managements vegetation monitoring plots have assisted in identification/monitoring of weed populations within reserve. This will be a key part in ongoing weed management within the reserve.
15) Regularly revise burning schedules and prescriptions to ensure they incorporate the most recent information on the fire ecology of flora, fauna and plant communities of conservation value in the reserve.	IS	Most current methodologies, legislation and data factored in at review stage of BMP.

RECOMMENDED ACTION	CODE	COMMENT
16) Coordinate bushfire management, weed management and other management activities, such as bush regeneration, using the procedure in MP 9.	PI	Communication has been ongoing between stakeholders throughout the life of the previous BMP.
17) Ensure all personnel engaged in planned burning activities in the reserve have the appropriate level of training and equipment as outlined in the bushfire management policy, and the minimum equipment listed in MP 7.	IS	Councils Fire and Bushland Crew has been fulltime since 2012. Crew Consists of three Workers, one Works Officer and one Coordinator. Since 2013 the crew has had extensive additional training to complement the existing high skillset. Additional training will be recommended to suit future crew development.
18) Record bushfire management activities and wildfires using the procedures in MPs 10 and 11.	IS	Since 2012 an extensive Fire Management context has been developed within Councils Geographical Information System (GIS). This is an ongoing project that records bushfire management data. This data is shared with State Government agencies with regular updates.

Appendix B

**Summary of community concerns and comments
in the initial round of community consultation**

COMMUNITY CONCERNS and COMMENTS	COUNCILS' COMMENT
Residents expressed concerns of mature pines being felled in Gorrings Beach Conservation Area and within the reserve and left - looks like a half finished job.	Referred to section 6.3 of Mortimer Bay Coastal Reserve – Reserve Activity Plan 2012-2016.
Happy with communication from Councils Fire and Bushland Crew when working in the reserve. Have at times gone over and explained to resident why and what they are doing.	Acknowledged positive feedback, passed onto Councils Fire and Bushland Crew to continue building relationships and creating awareness to adjoining residents.
Overall happy with how the reserve is managed.	Acknowledged positive feedback.