Clarence City Council

Bushfire Management Plan

Wiena Reserve
Lindisfarne

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Clarence City Council

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1. Introduction

This is the first Bushfire Management Plan for Wiena Reserve. It covers Council owned land on a small hilltop between Gordons Hill Road and Radiata Drive located in Lindisfarne. It will operate for a period of 5 years after which a review is recommended.

It should be noted that this Bushfire Management Plan 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. It should also be noted Wiena Reserve was formerly known as Avoca Hill Bushland Reserve.

1.1 Aim

The aim of this Bushfire Management Plan 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 2011-2016*, and *Bushfire Management Strategy Best Management Practice Guidelines 2011-2016.*

It must be noted that it will not be possible to prevent wildfires 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 Bushfire Management Plan 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 areas for maximum risk reduction
- Reduce bushfire hazard to protect assets from wildfires
- 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

Wiena Reserve covers approximately 3^{ha} on a small hilltop between Gordons Hill Road and Radiata Drive in the suburb of Lindisfarne (see figure 1). Wiena Reserve is a neighbouring hill to the south-east of Gordons Hill. The reserve borders bushland on private property with dwellings to the north, an existing developed area to the east, a new retirement village, Fairway Rise Lifestyle Village (formerly the Rosny Park Golf Course), to the south and bushland on private property with dwellings to the west (figure 3).

Wiena 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 predominantly by Triassic cross-bedded quartzose to feldspathic sandstone commonly with overturned cross-bedding, subordinate siltstone with sparse plant and vertebrate fossils. Soils in the reserve are moderately to highly erodible poor to imperfectly drained grey-brown podzolic soils. Excessive disturbance and burning may reduce productivity and promote erosion.

1.2.2 Vegetation

The two major vegetation communities in the reserve are shown in figure 5. Vegetation types have been classified according to the TASVEG 3.0 classification system. Plant community boundaries are derived from the *Natural Values Atlas*, modified after ground truthing.

The reserve is covered in native forest and woodland. The plant communities identified are *Eucalyptus amygdalina forest and woodland on sandstone (DAS)* which is listed as a threatened plant community in the *Nature Conservation Act 2002*, and *Eucalyptus viminalis grassy forest and woodland (DVG)*. The Regional Forest Agreement (RFA) has identified that additional statewide conservation is required for DVG in the South-east Bioregion.

1.2.3 Reserve Usage

The reserve is utilised locally for recreational activities such as walking, mountain biking and dog exercising.

Figure 1: Reserve Location

Source: Department of Primary Industries, Parks, Water and Environment. (2015). *The LIST LISTCORE-1.0.36-809*

1.3 Bushfire Management Objectives

Bushfire management within Wiena Reserve will meet the following broad management objectives:

1. Protection of life, assets and adjoining property from wildfire
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.

1.4 Reserve Management Responsibilities

Management of the reserve is the responsibility of the Clarence City Council. Council has a responsibility under the *Tasmania 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 wildfires within the reserve.

1.5 Management Plans

- A Reserve Activity Plan was prepared by Welling Consulting at the request of Clarence City Council and implemented in 2014, scheduled to be reviewed in 2018. This plan was designed to develop a prioritised list of on-ground activities to enhance the natural, cultural and recreational values of 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. The Australian Standard for Construction 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.

2.1 Bushfire History and Causes

The bushfire history of the Wiena Reserve is shown on figure 2.

2.1.1 Wildfires

Data supplied by the TFS showed that within the period July 1998 to June 2014 the TFS attended two vegetation fires and one vehicle fire in the reserve (see figure 2). All these fires were small (1 ha or less). Of the two vegetation fires in the reserve one ignition source was reported as malicious incendiary activity, the second ignition source was reported as a spontaneous ignition or chemical reaction occurring as a natural event, i.e. not deliberately lit. The vehicle fire was most likely due to the torching of a stolen car

TFS has no records of major wildfires impacting the reserve.

2.1.2 Planned Fires

There are no records of any planned burns within the reserve.

2.2 Fuel Types and Hazard Levels

The higher the intensity of a wildfire 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 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 2: Reserve fire history

Source: Department of Primary Industries, Parks, Water and Environment. (2015). *The LIST LISTCORE-1.0.36-809*
Tasmanian Fie Service (2015)

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 (Marden-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 spotfires 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 Wiena Reserve are given in table 1. The TASVEG 3.0 codes of the vegetation types corresponding to each fuel type are listed under the fuel type.

Table 1 – Characteristics of fuel type in the reserve

FUEL TYPE	FUEL HAZARD CHARACTERISTICS	BUSHFIRE BEHAVIOUR AND CONTROL
Forest and woodland on sandstone DAS	Canopy, bark, elevated, near surface and surface fuels all present. Ground fuel/near surface fuels predominantly grasses up to 1 metre in addition to bark build up. Dead mature eucalypts common throughout with bark build up at base. Approximate proportion of 10 living mature eucalypts to 5 dead standing eucalypts. Scattered moderate size dead eucalypts on ground. Generally low-moderate overall fuel loads but high where there is dense Lomandra growth. 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 accumulation. Significant ember attack on structures downwind of the bushfire and spotting across containment lines can be expected. Some locations in reserve capable of carrying a bushfire at any time of year if there is a sufficient amount of litter on the ground. Old hollow *Eucalyptus sp.* 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.
Grassy forest / woodland DVG	Canopy, bark, elevated, near surface and surface fuels all present. Ground fuel/near surface fuels predominantly grasses up to 1 metre in addition to bark build up. Dead mature eucalypts common throughout with bark build up at base. Approximate proportion of 10 living mature eucalypts to 5 dead standing eucalypts. Scattered moderate size dead eucalypts on ground. Generally low-moderate overall fuel loads but high where there is dense Lomandra growth. 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 accumulation. Significant ember attack on structures downwind of the bushfire and spotting across containment lines can be expected. Some locations in reserve capable of carrying a bushfire at any time of year if there is a sufficient amount of litter on the ground. Old hollow *Eucalyptus sp.* 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.

Near surface fuels in the form of grasses and leaf litter are by far the major fuel components in the reserve. Wildfires in these fuel types could be difficult to control. It is possible to reduce these fuels using a low intensity fire lit under suitable conditions.

2.3 Bushfire Threat and Risk to Persons

The main bushfire threat to Wiena Reserve is considered to come from bushfires spotting from Gordons Hill Nature Recreation Area, or western facing slopes of the Meehan Ranges or entering the reserve from private forested land to north-west through to north-east of the reserve on days with strong northerly to north-westerly winds. Such fires could quickly run the length of the reserve and threaten adjoining property.

The bushfire risk to persons in the reserve is considered to be low due to the reserves relatively small size (3ha). Exit times during bushfire conditions are anticipated to be relatively fast due to easy access to areas of low bushfire hazard (urban areas) surrounding the reserve.

2.4 Assets at Risk from Bushfire

Assets at risk from bushfire include dwellings and infrastructure which all would cost money to replace; as well as items of scenic, 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 fuel reduction burning, the risk of high intensity wildfires 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 3 and include dwellings, Telstra infrastructure and Fairway Rise Lifestyle Village (vulnerable usage).

2.4.1 Bushfire Risk to Natural Heritage Assets

The conservation value of the plant communities in Wiena Reserve (see figure 5) is given in table 2. No plant species of conservation value occur within the reserve at time of publishing this document. No fauna of conservation value has been reported within the reserve.

Table 2 – Conservation value of native plant communities

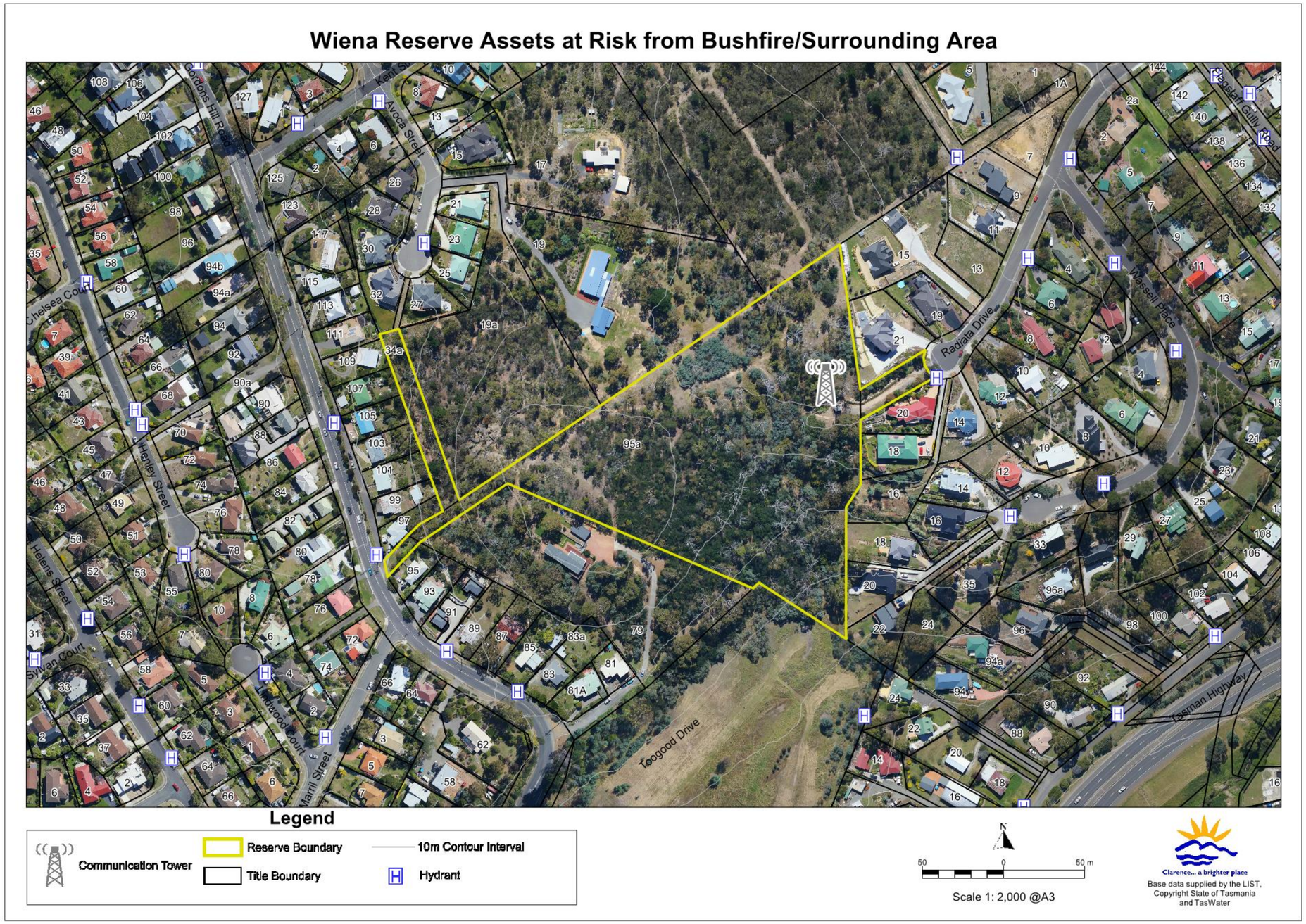
TASVEG CODE[1]	EQUIVALENT FLORISTIC COMMUNITY[2]	STATE CONSERVATION/ RESERVATION STATUS[2]	REGIONAL CONSERVATION/ RESERVATION STATUS[2]	Threatened Plant Community Listed under Nature Conservation Act 2002
DAS	DRY-gAM Grassy *E. amygdalina* forest/woodland forest	Priority A Community may be inadequately reserved in Tasmania, and/or may have a very high conservation priority in the region.	Priority Y* The RFA has identified that additional Statewide conservation is required for the community (oldgrowth and non-oldgrowth).	YES
DVG (identified through ground truthing)	DRY-gVIM Grassy *E. viminalis* forest	Priority A Community may be inadequately reserved in Tasmania, and/or may have a very high conservation priority in the region.	Priority Y The RFA has identified that additional Statewide conservation is required for the community (oldgrowth and non-oldgrowth).	NO

* - Community identified as Rare, Vulnerable or Endangered at a Statewide level through the RFA processes.

1. TASVEG 3.0

2. FPA - Forest Botany Manual, Module 5, Midlands Region (2005)

Figure 3: Assets at risk



Source: Clarence City Council (2015)

The bushfire sensitivity and flammability ratings of the vegetation types in the reserve according to Pyrke and Marsden-Smedley (2005), is given in table 3.

Table 3 – Fire attributes of the native vegetation

TASVEG	FIRE SENSITIVITY	FLAMMABILITY
DAS	Low	High
DVG	Low	High

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 WILDFIRE	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 in forested areas 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 native bushland in the reserve indicates it 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 wildfires 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.

Bushfire can favour the proliferation of bracken to the detriment of other native species and so where bracken is well established an extended absence from bushfire may be a useful tool to reduce its vigour.

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 wildfires in the reserve. The bushfire management requirements of the different plant communities/habitats in the reserve are given in table 4. These plant communities have been grouped together according to their bushfire management requirements.

Table 4 – Bushfire management requirements of the plant communities in the reserve

TASVEG MAPPING UNITS	BUSHFIRE IMPACTS AND BUSHFIRE MANAGEMENT AIMS
Dry sclerophyll forests and woodlands	
DAS –*Eucalyptus amygdalina* forest and woodland on sandstone	A single fire will generally not effect biodiversity, although repeated short intervals (i.e <10 years) may cause long term changes (e.g. encourage a dense bracken layer that can suppress other ground layer species.) Suppression is usually not an ecological priority except in specific situation (e.g a recently burnt stand of a threatened species.) **Optimal ecological fire frequency is 10-15 years.**
DVG – *Eucalyptus viminalis* grassy forest and woodland	A single fire will generally not effect biodiversity, although repeated short intervals (i.e <10 years) may cause long term changes (e.g. encourage a dense bracken layer that can suppress other ground layer species.) Suppression is usually not an ecological priority except in specific situation (e.g a recently burnt stand of a threatened species.) **Optimal ecological fire frequency is 10-15 years.**

2.4.3 Bushfire Risk to Built and Cultural Assets

During the BMP research process Aboriginal Heritage Tasmania (AHT) completed a requested search of the Aboriginal Heritage Register (AHR) regarding the area inside the BMP boundary. There are no known Aboriginal heritage sites within the reserve.

Records of European cultural heritage show sandstone was quarried from various locations in the reserve during the early 1900's. Further sandstone and gravel quarrying was undertaken following WWII. A number of small quarries are still apparent within Wiena Reserve. Bushfire risk to these cultural assets is low.

The only infrastructure in the reserve likely to be at risk from bushfires is a Telstra communications tower located at the Radiata Drive entrance and reserve perimeter fences. Fences in and around the reserve include stock fencing, chain link security fencing and wooden paling fences on steel supports.

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.

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 severe or higher fire danger. The bushfire risk to the built 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's Bushfire Management Strategy for Council Owned and Controlled Land 2011-2016*, and the results and proposed management strategies are in table 5. Note that the assessment in table 5 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.

The risk levels indicated in table 5 should be considered a relative ranking.

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

- Landowners/residents have established and are maintaining a defendable space to TFS specifications around vulnerable assets, either wholly within the lot, or up to the boundary with the park 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 park 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 5 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 5 – Bushfire risk assessment for built and cultural assets

RISK CATEGORIES

LOW – asset of low value or considered to have a relatively 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.

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.

ASSET AT RISK	RISK ANALYSIS (See section 5.4 of the Bushfire Management Strategy)								PROPOSED MANAGEMENT STRATEGIES Note: The distances shown may be able to be reduced if the building has its fire resistance increased in accordance with AS:3959-2009.
	A	**B**	**C**	**D**	**E[1]**	**F**	**G**	**Level of Risk**	
Dwelling on 21 Radiata Drive	3	3	3	2	2	1	6	648 Moderate	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.
Dwelling on 79 Gordons Hill Road	3	2	3	2	3	1	6	648 Moderate	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.
Dwelling on 20 Radiata Drive	3	2	3	2	2	1	6	432 Moderate	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.
Dwelling on 18 Radiata Drive	3	1	3	2	2	1	6	216 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.

ASSET AT RISK	RISK ANALYSIS (See section 5.4 of the Bushfire Management Strategy)								PROPOSED MANAGEMENT STRATEGIES Note: The distances shown may be able to be reduced if the building has its fire resistance increased in accordance with AS:3959-2009.
	A	**B**	**C**	**D**	**E[1]**	**F**	**G**	**Level of Risk**	
Future dwelling on 16 Radiata Drive	3	1	3	2	2	1	6	216 Low	Bushfire Risk Assessment by Gifford Bushfire Risk assessments in December 2013 gives the proposed dwelling construction standards to a BAL-29 rating. This is providing the vegetation within the extent of the property boundaries is maintained in a low fuel state (maintained as a bushfire protection zone) and the assessed characteristics of adjacent vegetation remains consistent. Any future dwellings and any outbuildings located within 6metres of the dwelling are to be constructed and maintained in accordance with sections 3 and 7 of AS:3959-2009 *Construction of Building in Bushfire-Prone Areas.* Clarence City Council to continue maintaining a minimum 5m outer zone as stated in MP5 guidelines of *Clarence City Council Bushfire Management Strategy Best Management Practice Guidelines.*
18 Wassell Place	3	1	3	2	2	1	6	216 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.
20 Wassell Place	3	1	3	2	2	1	6	216 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.
22 Wassell Place	3	1	3	2	2	1	6	216 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.
Dwellings on 99, 101, 103, 105 and 107 Gordons Hill Road	3	1	1	2	2	1	6	72 Low	It is not known what BAL, if any, these buildings are constructed to. Advise residents of the need to maintain adequate defendable spaces around dwellings. The average building setback from the reserve boundary for these sites is 20m. Recommend that Council manage VMU 1 behind properties as outer zone as per MP5 *Clarence City Council Bushfire management Strategy – Best management Guidelines.*
Telstra communications tower	3	2	3	1	2	1	2	72 Low	Clear all trees, shrubs and bushes within 10m of the tower.

ASSET AT RISK	RISK ANALYSIS (See section 5.4 of the Bushfire Management Strategy)								PROPOSED MANAGEMENT STRATEGIES Note: The distances shown may be able to be reduced if the building has its fire resistance increased in accordance with AS:3959-2009.
	A	**B**	**C**	**D**	**E[1]**	**F**	**G**	**Level of Risk**	
Dwelling on 109 Gordons Hill Road	3	1	1	2	2	1	6	72 Low	It is not known what BAL, if any, this building is constructed to. The building setback from the reserve boundary is 4m. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council manage section of VMU 1 behind property as outer zone as per MP5 *Clarence City Council Bushfire management Strategy – Best management Guidelines.*
Dwelling on 19 Avoca Street	3	2	3	2	0.2	1	6	43.2 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. The building setback from the reserve boundary is 35m. No defendable space required within the reserve.
Dwelling on 20 Kent Street	3	2	3	2	0.2	1	6	43.2 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. The building setback from the reserve boundary is 150m. No defendable space required within the reserve.
Dwelling on 15 Radiata Drive	3	2	3	2	0.2	1	6	43.2 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. Recommend that Council maintain a 15m outer zone within the reserve.
Fairway Rise Lifestyle Village	5	1	3	2	0.2	1	6	36 Low	Facility has been constructed to BAL-12.5 standards as outlined in the Fire Management Plan endorsed and revised by the Tasmanian Fire Service in June 20. BAL- 12.5 primary concern is protection from ember attack. It is recommended that all buildings have a cleared space free of large flammable trees within close proximity and/or garden beds incorporating species with low flammability. Advise Fairway Rise Lifestyle Village of the need to maintain grounds as stated in the Fire management Plan.

ASSET AT RISK	RISK ANALYSIS (See section 5.4 of the Bushfire Management Strategy)								PROPOSED MANAGEMENT STRATEGIES Note: The distances shown may be able to be reduced if the building has its fire resistance increased in accordance with AS:3959-2009.
	A	**B**	**C**	**D**	**E[1]**	**F**	**G**	**Level of Risk**	
Future dwelling on 19A Avoca Street	3	3	3	1	0.2	1	6	32.4 Low	Bushfire Risk Assessment by Lark & Creese Land and Engineering Surveyors in June 2014 give the proposed dwelling construction standards to a BAL-19 rating. The hazard management area required is 15-<22metres. At the time of BAL assessment the hazard management area available between the dwelling and the reserve boundary was 39 metres and 21.6metres between the shed and the boundary. Given that the required hazard management area is available within 19A Avoca Street, no additional clearing is required in the reserve.
Dwelling on 95 Gordons Hill Road	3	1	3	2	0.2	1	6	21.6 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. The building setback from the reserve boundary is 5m. Recommend that Council manage section of VMU 1 adjacent to property as outer zone as per MP5 *Clarence City Council Bushfire management Strategy – Best management Guidelines.*
Dwelling on 97 Gordons Hill Road	3	1	1	2	0.2	1	6	7.2 Low	It is not known what BAL, if any, this building is constructed to. Advise residents of the need to maintain an adequate defendable space around dwelling. The building setback from the reserve boundary is 1m. Recommend that Council manage sections of VMU 1 adjacent to property as outer zone as per MP5 *Clarence City Council Bushfire management Strategy – Best management Guidelines.*
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 defendable space between bushland in the reserve and an adjoining asset. It does not indicate that a defendable space has been established on the adjoining property, or if established is being adequately maintained.

3. Bushfire Management Issues

3.1 Existing Bushfire Management

3.1.1 Planned Burning

There is no record of any planned burning within the reserve. A planned burning program on a mosaic pattern should be implemented as part of this Bushfire Management Plan (see section 4.2.1 and table 8).

3.1.2 Vehicle Access Routes and Foot Tracks

There are currently only two vehicle access routes into the reserve; one through Council managed land leased to Telstra off Radiata Drive and the other along a Council right of way (ROW) on private property located at 79 Gordons Hill Road. This ROW was created out of the subdivision of part of Gordons Hill Road. The land which is now Wiena Reserve was transferred to Council and a ROW created to allow access to that reserve. The ROW is currently overgrown with vegetation and vehicular access over the ROW to the reserve is difficult. As the benefiting party of the ROW Clarence City Council has the right to maintain vegetation over the ROW so that it can gain vehicular access to the reserve. Both access routes link up via an old access track.

It is planned that this ROW will link up to access from Radiata Drive forming the main fire trail WR1 (see table 6 and figure 4).

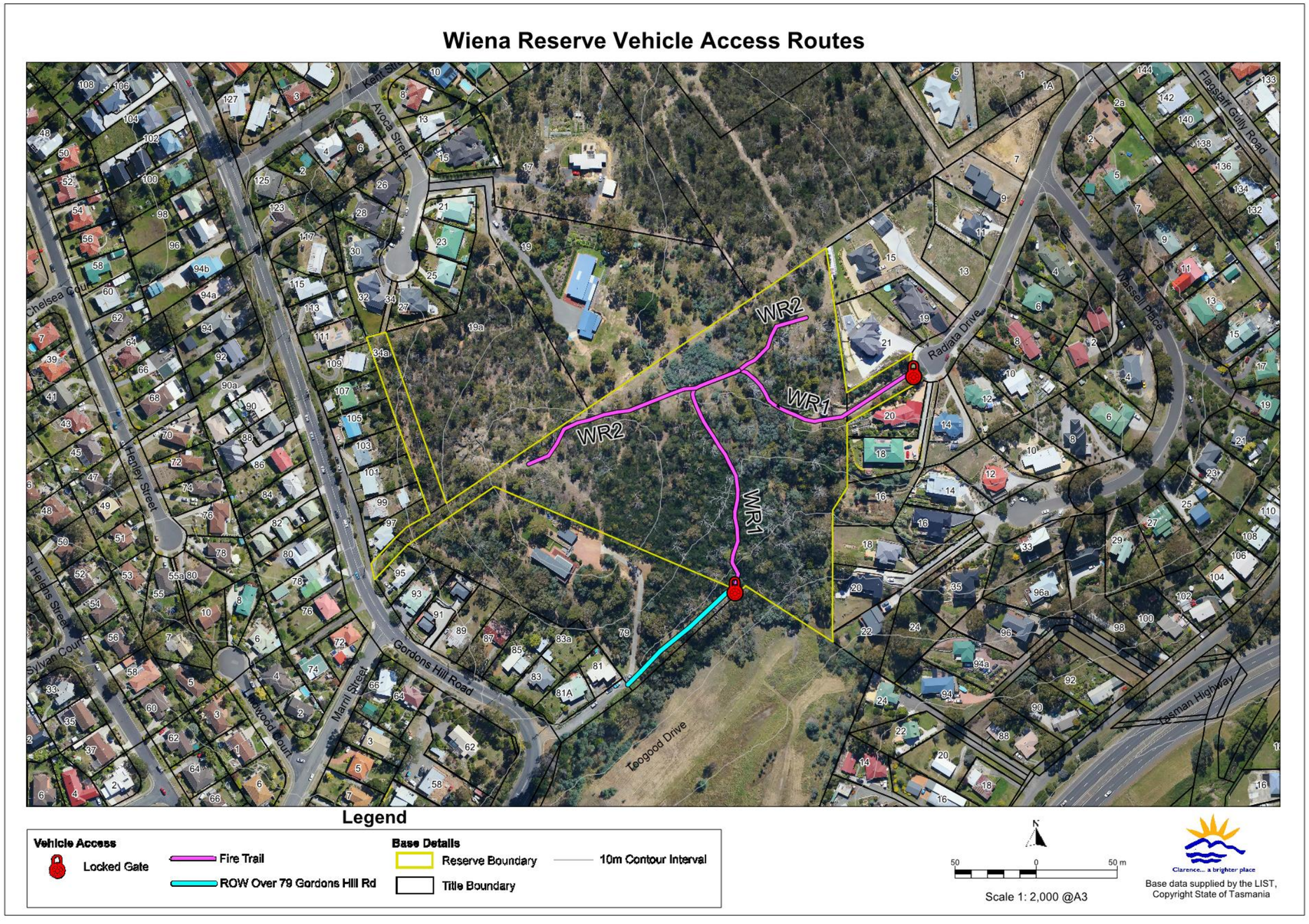
There is also a fire trail that runs along the boundary north-east through south-west adjacent to 20 Kent Street, 19 Avoca Street and 19A Avoca Street; this can be accessed from the Radiata Drive entrance and is accessible all year round.

There are currently 4 public entry points for foot traffic into the reserve. One is located between 95 and 97 Gordons Hill Road. At this location foot traffic has then followed a track on privately owned land on 79 Gordons Hill Road to the top of the reserve. It is recommended that agricultural fencing be established to delineate land tenure between Council and 79 Gordons Hill Road and a foot track be established on council land and linked to the already established informal track network throughout the reserve. It is also recommended that during this process the foot track at 34A Avoca Street be upgraded to Clarence City Council standards.

3.1.3 Water Supply

There are no water sources within the reserve. Water for firefighting and bushfire management can be easily obtained from ground ball hydrants in the streets surrounding the reserve (figure 3).

Figure 4: vehicle access routes



Source: Clarence City Council (2015)

Table 6 – Condition and maintenance of fire trails in the reserve

Assigned vehicle usage class (see Management Procedure 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 (see MP 1 of *Clarence City Council Bushfire Management Strategy Best Management Practices Guidelines*).

FIRE TRAIL Ref. No.	USAGE CLASS[1]	MAINTENANCE PRIORITY	LOCATION AND CONDITION AT OCTOBER 2015	ACTION REQUIRED
WR1	5	High	Runs from Council right of way on private property at 79 Gordons Hill Road though to Radiata Drive access.	Restrict public vehicle access via installing signage and boom gate at right of way on 79 Gordons Hill Road. Clear encroaching vegetation to Class 5 usage specifications. Upgrade fire trail to class 5 specifications linking to WR2. Inspection and maintenance as recommended in MP2.
WR2	5	Medium	Runs from Radiata Drive north-east through south-west. South-western end is a dead end.	Upgrade fire trail to class 5 specifications. Inspection and maintenance as recommended in MP2.

1 – Fire trail usage classes are described in Management Procedure (MP) 1 in the *Clarence City Council Bushfire Management Plan, Best Management Practices Guidelines 2011-2016*.

3.1.4 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.

One fuel break has been established in the park, running from fire trail W2 to W16. This is maintained annually.

The powerline easement that crosses the park from the Nankoor Crescent entrance to W6 forms a partial fuel break.

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 should be moved away from the house.

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.

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

The existence and adequacy of defendable 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 defendable 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.

3.1.5 Bushfire Detection and Suppression

Wiena 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 or on neighbouring properties with private bushland to the north. These fires could run or spot into the reserve, in conjunction fires could spot from Gordons Hill Reserve or western facing slopes of the Meehan Ranges.

The existing fire trails in the reserve need to be upgraded to MP1 + MP2 guidelines as per table 6 recommendations. This will allow the TFS to easily access bushfires that start within the reserve.

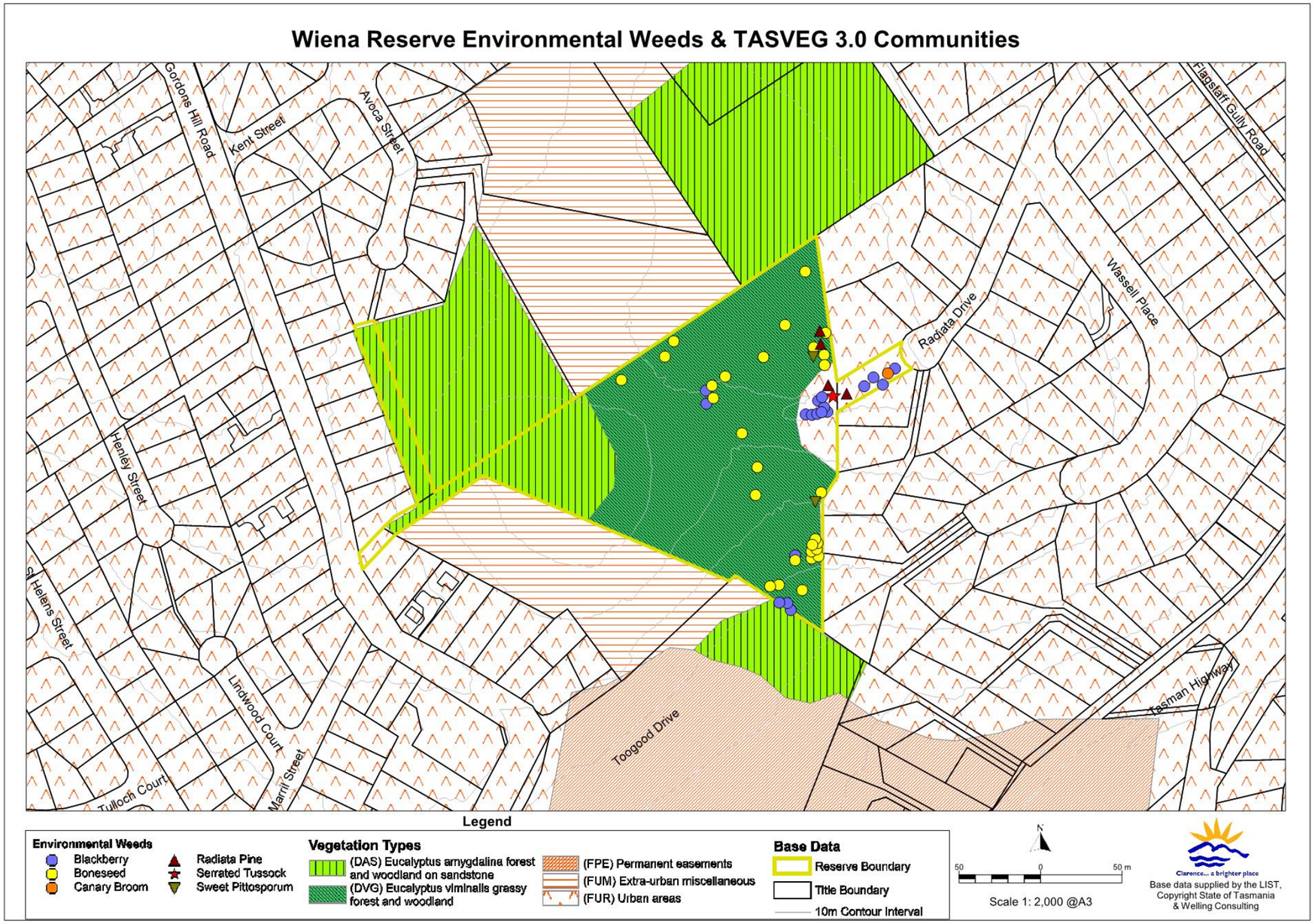
3.2 Weeds

The weed species recorded in the reserve are shown on figure 5 and their occurrence and response to fire is given in table 7.

At present the reserve is free of major weed infestations with only localised or scattered occurrences of some environmental weeds typical of urban fringe bushland. The most weed-affected area is the eastern section of the reserve (see figure 5).

Boneseed (*Chrysanthemoides monilifera*), sweet pittosporum (*Pittosporum undulatum*), canary broom (*Genista monspessulana*), radiata pine (*Pinus radiata*) and blackberry (*Rubus fruticosus*) occurs on the south-eastern slopes. Pre and post burn weed management will be fundamental to control the rate of spread to unaffected locations within the reserve.

Figure 5: Envioronmental weeds & TASVEG 3.0 communities



Source: Department of Primary Industries, Parks, Water and Environment. (2015). *The LIST LISTCORE-1.0.36-809*

Clarence City Council. (2014-2018). Reserve Activity Plan, *Avoca Hill Reserve and North Warrane Bushland Reserve.*

Table 7 – Weed species habitat and their response to fire

Priority weeds are identified in **bold**.

WEED SPECIES	OCCURRENCE	WHOLE PLANT KILLED	RE-SPROUTS FROM ROOTSTOCK[3]	RE-SPROUTS FROM EPICORMIC BUDS	SEED GERMINATION LIKELY AFTER FIRE	COMMENTS
Agapanthus sp. (Agapanthus)	Scattered along reserve boundaries adjoining private property		X			Fire retardant species.
***Chrysanthemoides monilifera ssp. monilifera* (boneseed)** [1 2]	Scattered throughout reserve		X		X	Re-sprouts if fire is not hot enough to kill plant.
***Nassella trichotoma* (Serrated tussock)** [1 2]	Small population near communication tower		X		X	Burning will not kill serrated tussock but, if burnt in winter, will stop most plants from setting seed and therefore potentially spreading.
Pinus radiata (radiata pine)	Isolated trees scattered throughout reserve	X			X	Priority to remove trees before they mature to point of seeding.
Pittosporum undulatum (sweet pittosporum)	Isolated plants scattered throughout reserve	X			X	
***Rubus fruticosus* (blackberry)** [1 2]	Radiata Drive entrance, around communication tower and south eastern boundary		X			

1 WONS = Weed of National Significance – National Weed Strategy 2006

2 Declared Weed – Tasmanian *Weed Management Act 1999*

3 Some plants may resprout after low intensity fires but will be killed by high intensity fires.

3.3 Stakeholder and Community Concerns

At the commencement of the project Clarence City Council engaged *Welling Consulting* to develop a Reserve Activity Plan. This document has now been formalised as *Reserve Activity Plan 2014-2018 Avoca Hill Bushland Reserve and North Warrane Bushland Reserve.* During the drafting stage community consultation was engaged in the form of a "walk and talk" on November 17th 2013 in which 16 residents attended. In conjunction 6 written feedback forms or emails were received.

Additional meetings with residents were also conducted as required.

In addition, 1 written comment was received following the release of draft *Reserve Activity Plan 2014-2018 Avoca Hill Bushland Reserve and North Warrane Bushland Reserve* relating to fire management and fire tolerant species.

The main community concerns about bushfire management in the reserve is summarised in Appendix A. These issues of concern where predominantly dead trees over hanging tracks and public movement through the reserve thinking adjoining private property was included in the reserve.

Fairway Rise Lifestyle Village was not constructed during the development of the Reserve Activity Plan. Engagement has been made during draft stages of *Wiena Reserve Bushfire Management Plan*.

4. Plan Implementation

To ensure that the recommendations in this plan are fully implemented, Clarence City Council is to ensure that TFS brigades likely to attend wildfires 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:

- Carry out strategic planned burning and manual fuel removal to reduce bushfire hazards in the reserve.
- Reduce ignitions through prosecution of arsonists, and prompt reporting of fires.
- Upgrade existing access points and fire trails to the standard in the *Clarence City Council Bushfire Management Strategy, Best Management Practices Guidelines 2011-2016*. Ensure the TFS are familiar with the location and condition of fire trails in the reserve.
- Ensure that new dwellings adjoining the reserve are constructed to AS:3959-2009 standards and have outer zones contained within the lot. Where adjoining dwellings cannot provide the required outer zones on the lot, maintain an equivalent distance as an outer zone within the reserve.
- Encourage neighbouring residents to maintain defendable 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 within 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 the *Clarence City Council Bushfire Management Strategy for Council Owned and Controlled Land 2011-2016*.

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 a Bushfire Management Plan. If residents have any concerns about the bushfire hazard in the reserve near their home, they should be encouraged to contact Clarence City Council's Fire and Bushland Vegetation Management Coordinator via the Clarence City Council Chambers.

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 recolonization of burnt areas.

The approach adopted in this plan is to use planned burning primarily for habitat management. However, burning for habitat management will have the additional benefit of reduced bushfire hazard for a period following each burn. Council acknowledges that in some circumstances planned burning for asset protection will take precedence over ecological burning regimes.

4.2.2 Vegetation Management Units (VMU)

The bushfire management works program in this plan is based on the division of the reserve into vegetation management units (VMU) (see figure 6). VMUs can be burnt at a frequency, season and intensity that is 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 4. These VMUs allow 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 brush cutting/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. Fuel reduction burns within the reserve have been scheduled in table 8. 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 8, if required. If a wildfire 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 6: Vegetation management units in reserve

Source: Clarence City Council (2015)

Table 8 – Bushfire management in the reserve

VMU[1]	AREA (ha)	BUSHFIRE MANAGEMENT OBJECTIVES and PRESCRIPTIONS	NOTES and PRECAUTIONS	LAST BURNT	NEXT BURN
1 DAS DVG	1.2	OBJECTIVES: Maintain as outer zone to protect adjoining dwellings. Reduce the extent and density of weeds. PRESCRIPTION: See guidelines for outer zones in MP 5 in the *Clarence City Council Bushfire management Strategy Best Management Practices Guidelines 2011-2016*.	Notify Fairway Rise Lifestyle Village prior to burning. Heap burn only.	Not known	As required
2 DAS DVG	1.1	OBJECTIVES: Reduce fuel loads whilst maintaining vegetation structure and floristics. Reduce the extent and density of weeds. PRESCRIPTION: Heap burn and patch burn every 10-15 years in Autumn or spring	Protect Telstra tower during burns. Notify Fairway Rise Lifestyle Village prior to burning.	Not known	2016
3 DVG FUR	0.7	OBJECTIVES: Reduce fuel loads whilst maintaining vegetation structure and floristics. Reduce the extent and density of weeds. PRESCRIPTION: Heap burn and patch burn every 10-15 years in Autumn or spring	Protect Telstra tower during burns. Notify Fairway Rise Lifestyle Village prior to burning.	Not known	2021

1 – includes TASVEG 3.0 codes of vegetation types in the unit.

4.2.4 Burn 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 earth moving machinery 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 the *Clarence City Council Bushfire management Strategy Best Management Practices Guidelines 2011-2016* includes guidelines for integrating weed management with management burning, and for minimising the risk of weed invasion following wildfires. 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 and ornamental 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 outer zones or inner zones established around assets at risk
- on fuel breaks
- within 2m of the edge of fire trails.

If a bush regeneration planting program is carried out in the reserve this 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 Vegetation Condition Monitoring

It is important that planned burning does not damage the known threatened plant community DAS –*Eucalyptus amygdalina* forest and woodland on sandstone within Wiena Reserve. In the absence of any specific information on the bushfire management requirements of a particular threatened species, this bushfire management plan is prepared aiming to maintain the structure and floristics of DAS. This should be monitored for any changes in population size following wildfires and planned burns. A minimum of one vegetation conditioning monitoring plot is to be established within the DAS community and reassessed at each BMP review. This will allow fire regimes to be altered if they are having an adverse impact on threatened species

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 wildfires, 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 management procedures in the *Clarence City Council Bushfire Management Strategy Best Management Practices Guidelines 2011-2016*. 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) Assess hazardous trees adjacent to walking tracks and fire trails and after any planned burns or bushfires	1, 4	E - A	Clarence City Council	No users of the reserve injured by fallings trees or branches.
2) Install appropriate signage at all public entrances to reserve	1	E – 1A	Clarence City Council	No confusion by TFS when attending incidents within reserve.
3) Install agricultural fencing where required to delineate land tenure	4	R - 1	Clarence City Council Private landowners	No confusion on boundaries during planned burns.
4) Upgrade/install walking tracks where required	3	R – 2A	Clarence City Council	Tracks meet Clarence City Council standards.
5) Carry out maintenance to bring VMU 1 up to MP5 standards	1	E – 1A	Clarence City Council	VMU meets MP 5 standard.
6) Cut back vegetation at ROW and install boom gate with appropriate signage	1, 2, 3, 4	E - 1	Clarence City Council	Boom gate to meet MP 2 standard. ROW constructed to vehicle usage class 5 standards in MP 1.
7) Implement the bushfire protection measures in section 2.4 for protection of assets in and around the reserve.	1, 4	E	Clarence City Council Private landowners	Bushfire protection measures for adjoining dwellings implemented and maintained. No assets lost to fires originating in, or moving through, the reserve.
8) Upgrade existing fire trails as detailed in table 6 and shown on figure 4.	2, 6	E	Clarence City Council	Fire trails upgraded and maintained to usage class 5 standard in MP 1
9) Carry out fire trail repairs and maintenance listed in table 6.	2, 6	ROU -A	Clarence City Council	Fire trail repair and upgrade works listed in table 6 completed.

RECOMMENDED ACTION	OBJECTIVE (section 1.3)	PRIORITY	RESPONSIBILITY	PERFORMANCE INDICATORS
10) 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.	2	ROU - A	Clarence City Council	No unauthorised use of fire trails in the reserve. Security lock system implemented, keys distributed to Tasmania Fire Service brigades and other emergency services.
11) Conduct a familiarisation tour of the reserve with Clarence Fire Brigade.	1, 2, 4	REC	Clarence City Council Tasmania Fire Service	Clarence Fire Brigade familiar with bushfire management assets in the reserve.
12) Treat any weeds in areas to be burnt under this bushfire management plan according to MP 8 in the *Clarence City Council Bushfire management Strategy Best Management Practices Guidelines 2011-2016*. Ensure follow-up weed work is carried out after planned burns and wildfires.	3, 5	REC – A/S	Clarence City Council	Pre- and post-fire weed control carried out in any weed infested VMUs burnt under this plan. Post burn weed control carried after any bushfires. Minimal coppicing or regrowth of weeds from treated rootstock. No increase in weed population/distribution post planned burns or bushfires.
13) Consult Natural Values Atlas in planning stage of planned burns. Consult DPIPWE if required during planning stage of planned burns.	3	E	Clarence City Council DPIPWE Threatened Species Section	All planned burns carried out according to the requirements of threatened flora and fauna. No decline in the populations of threatened or rare flora and fauna due to planned burns.

RECOMMENDED ACTION	OBJECTIVE (section 1.3)	PRIORITY	RESPONSIBILITY	PERFORMANCE INDICATORS
14) 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 in the *Clarence City Council Bushfire management Strategy Best Management Practices Guidelines 2011-2016*.	1, 2	E	Clarence City Council	All personnel are able to demonstrate the required level of training and minimum levels of equipment.
15) Erect appropriate signs on tracks and roads to warn reserve users of planned burns.	1	E	Clarence City Council	No users of the reserve injured by planned burns.
16) Carry out planned burning according to the schedule in table 8 using the procedure in MP 7.	2, 3, 4, 5	E - A/S	Clarence City Council	Mosaic of burnt VMUs maintained. No decline in the structure and floristics of the native vegetation in the reserve.
17) Implement the recovery procedures in MP 12 following planned burns and wildfires.	1, 5, 6	E	Clarence City Council	Post-fire recovery carried out after planned burns and wildfires. No users of the reserve injured by fires or the effects of fires.
18) Record bushfire management activities and wildfires using most current Clarence City Council methodologies.	3, 4, 5, 6	REC – A/S	Clarence City Council	Records maintained of all bushfire management activities.
19) 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	Bushfire management plan revised every 5 years.

RECOMMENDED ACTION	OBJECTIVE (section 1.3)	PRIORITY	RESPONSIBILITY	PERFORMANCE INDICATORS
20) 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	Meetings held as recommended in MP9 and the outcomes recorded.

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Appendix A

Summary of community concerns and comments

COMMUNITY CONCERNS and COMMENTS	COUNCILS COMMENT
Concerns with people walking through adjacent private property thinking it is part of Wiena Reserve.	Recommend Council right of way over land at 79 Gordons Hill Road to have signage and fencing/boom gate installed where required. Vegetation over right of way is also to be maintained by Council to abide by MP2 guidelines. Council to continue communications with residents through process.
Concerns on weed management pre and post burn. Also concerns on introducing new weeds through machinery usage in reserve.	Council to abide MP1 and MP8 of *Clarence City Council Bushfire Management Strategy Best Management Practice Guidelines.*
Safety concerns regarding dead trees overhanging walking tracks.	Dangerous trees to be assessed by competent person and treated as required.