Tasmanian Wilderness World Heritage Area

Draft Fire Management Plan
Acknowledgements

Whilst this fire management plan for a large part focusses upon contemporary fire management and bushfire response within the Tasmanian Wilderness World Heritage Area, this is done with full recognition that Tasmanian Aboriginal people have lived in this country for at least 40,000 years. The landscapes of the TWWHA are therefore intrinsically linked with Tasmanian Aboriginal cultural and land management practices.

With this understanding we acknowledge and honour the Traditional Owners and their Elders, past, present and of future generations.

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Department of Primary Industries, Parks, Water and Environment

COVER PHOTO: Gell River bushfire, 2019.
Photo: Chris Emms

PHOTO THIS PAGE: Assessing bushfire damage, Mount Eliza 2019. Photo: Stu Gibson
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Glossary

**Aboriginal burning**
Burning practices developed and undertaken by Aboriginal peoples to enhance the health of the land and its people.

**AHT**
Aboriginal Heritage Tasmania, a branch within DPIPWE.

**AIIMS**
Australasian Inter-service Incident Management System.

**ALCT**
Aboriginal Land Council of Tasmania.

**APZ**
Asset Protection Zone.

**Asset**
Refers to natural, tourism, recreational, cultural and historic values. The term ‘asset’ is used interchangeably with ‘values’ throughout this document.

**AZ**
Asset Zone.

**Biodiversity**
The diverse variety of all life forms including microorganisms, animals and plants. The term is scalable from the genetic diversity within a single species, to community, and to ecosystem levels.

**BOHM**
Bushfire Operational Hazard Model.

**BRAM**
Bushfire Risk Assessment Model.

**BRAT**
Burn Risk Assessment Tool.

**BRMP**
Bushfire Risk Management Plan.

**BRU**
Bushfire Risk Unit.

**Bushfire**
Unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective.

**Climate change**
A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (UNFCCC definition)².

**Community**
A group of people living in a specific geographic area, or with mutual interests, who could be affected by a proposal.

**Conservation**
All the processes and actions of looking after a place so as to retain its significance or values. This includes protection, maintenance and monitoring⁹.

**COP**
Common Operating Platform.

**Cultural values**
Aboriginal values of the TWWHA both tangible (e.g. sites, and landscapes) and intangible (e.g. story, song, dance, language, kinship, custom, ceremony and ritual).

**DPIPWE**
Department of Primary Industries, Parks, Water and Environment.

**Environment**
Has the same meaning as described in ISO 14050 Environmental management – Vocabulary. Environment includes air, water, land, natural resources, flora, fauna, human-made or modified structures or areas. Social, political, and recreational environments are included. Hence the term “environment” encompasses the natural, cultural, social and economic environments.

**Fire-dependent**
Natural and cultural values that persist only with periodic burning.

**Fire Duty Officer**
A PWS employee rostered to co-ordinate incident response and resources on PWS management land.
Fire refugia
Areas historically resistant to fire incursion due to topographic protection, the presence of natural fire breaks (expanses of rock, water or low flammability vegetation) or a combination of the two and therefore support a suite of species not commonly found outside these areas.

Fire-sensitive
Natural, cultural and historic values that will be significantly damaged by any fire. In some cases the value may survive a single fire but is unlikely to persist after subsequent fires.

Fire tolerant
Natural, cultural and historic values that are likely to persist in the presence of fire, however, may be eliminated if the tolerable fire intervals are exceeded.

FMAC
Fire Management Area Committee, established under the Fire Service Act 1979.

Historic values
European heritage values of the TWWHA, including huts and convict sites.

IMT
Incident Management Team.

LISTmap
An online map application that allows the user to combine multiple layers of information in order to create and view maps.

LMZ
Land Management Zone.

Natural values
A feature or system of nature, as opposed to humans and human products. This includes native plants, animals and other organisms; the communities they form; geological and geomorphic features and the landscapes these features combine to create.

NCC
National Construction Code.

NCH
Natural and Cultural Heritage division of DPIPWE.

NVA
Natural Values Atlas.

Management Plan
A statutory management plan prepared and approved under the National Parks and Reserves Management Act 2002 covering reserved land, or under the Crown Lands Act 1976 covering public reserves.

OUV
Outstanding Universal Value - cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity, as detailed for the TWWHA in the properties Statement of Outstanding Universal Value.

Palaeoendemic
Clades (a group of organisms that are composed of a common ancestor) that are ancient but geographically restricted.

PB-DST
Planned Burn Decision Support Tool.

Planned burn
The controlled application of fire under specified environmental conditions to a pre-determined area and at the time, intensity and rate of spread required to attain planned resource management objectives. Planned burning is undertaken in specified environmental conditions.

PTPZ
Permanent Timber Production Zone Land.

PWS
Tasmania Parks and Wildlife Service.

RAA
Reserve Activity Assessment.

Reserve

Reserved land
Land, including land covered by water, and the water, reserved under the Nature Conservation Act 2002.

Reserve management objectives
Refers to the objectives for management of reserved land listed in Schedule I of the National Parks and Reserves Management Act 2002, and the objectives
for management of public reserves listed in Schedule 4 of the Crown Lands Act 1976. The objectives depend on the reserve type and apply to the whole reserve.

**Reserve values**
The natural significance and/or cultural significance and/or historic significance of a thing, site or place within a reserve. See also separate definitions for natural values, cultural values and historic values.

**RVFPP**
Reserve Values Fire Protection Plans.

**SFMC**
State Fire Management Council.

**SFMZ**
Strategic Fire Management Zone.

**Stakeholder**
Any person or group with an interest in, or the potential to be affected by, an activity.

**STT**
Sustainable Timber Tasmania.

**TAC**
Tasmanian Aboriginal Centre.

**TERAG**
Tasmanian Emergency Risk Assessment Guidelines.

**TFS**
Tasmania Fire Service.

**TLC**
Tasmanian Land Conservancy.

**Tolerable fire interval**
The minimum and maximum time since fire required for ecological maintenance of the community. Tolerable fire intervals are based on accumulated knowledge of the fire responses of individual species, most commonly plants.

**Tourism**
The business of providing services (recreational use) for people on holiday including entertainment, lodging, food, etc.

**TWWHA**
Tasmanian Wilderness World Heritage Area.

**WPD**
Weeds, pests and diseases.

1. Australasian Fire and Emergency Service Authorities Council Bushfire glossary.
1. Background

The Tasmanian Wilderness World Heritage Area (TWWHA) is home to globally significant natural and cultural values and was listed as a World Heritage Area by UNESCO in order to protect, conserve, present and pass on to future generations one of the world’s outstanding natural areas. The ecosystems of the TWWHA are a product of millennia of active fire management, with records of people using fire as a management tool in the region extending back at least 40,000 years. Active fire management is still required in order to preserve the World Heritage values of the TWWHA.

Contemporary fire management refers to both the application of prescribed fire and the suppression of unplanned bushfires. Prescribed fire, or planned burns, are used for both asset protection, by reducing the fuel load of treatable vegetation, as well as ecological maintenance, as a healthy ecosystem is dependent on vegetation communities being burnt at a certain fire frequency and intensity. Many of the ecosystems within the TWWHA are fire dependent, meaning that in the absence of fire they will cease to exist, transitioning to a different vegetation community with a longer fire return interval. In addition, the absence of planned burning results in higher fuel loads in flammable vegetation, increasing the chance of unplanned ignitions and resultant bushfires. For these reasons, complete fire suppression within the TWWHA is not only impractical but also undesirable.

A bushfire can only occur when there is an ignition source present. The management and education of people within the TWWHA has reduced the number of human ignited bushfires (e.g. escaped campfires), but this has coincided with an increase in the number of lightning ignited bushfires, which has risen substantially since circa 2000.

It is important to reduce the fuel hazard because fires will burn at higher rates of spread and greater intensities when the fuel load is high. Thus, a lower fuel load makes a bushfire safer and more likely to be brought under control.

Like planned burns, bushfires will also reduce the fuel hazard, however there are a number of reasons why reducing the fuel load in a controlled manner, such as planned burning, is preferable. As bushfires are uncontrolled they often cause damage to people, infrastructure and ecosystems. The conditions under which some bushfires occur mean that fire-sensitive vegetation that is often too wet to burn (e.g. rainforest) may in fact burn. A high intensity fire also results in a uniform burn over a large area, a condition that is undesirable for ecosystem health. Management through the use of targeted planned burning eliminates the above consequences and reduces the bushfire risk. Additional bushfire risk mitigation activities include having appropriate fire response strategies and prepositioning in place.

1.1 Tasmanian Wilderness World Heritage Area Fire Management Plan

Fire management is essential to achieving the vision and objectives of the Tasmanian Wilderness World Heritage Area Management Plan (2016). The need to develop a fire management plan for the TWWHA was recognised in Key Desired Outcome 8.1 of the Tasmanian Wilderness World Heritage Area Management Plan (DPIPWE 2016) and addresses Recommendation 1 of the Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project (Press 2016).

Tasmanian Wilderness World Heritage Area Management Plan (2016)

Key Desired Outcome 8.1

Integrated fire management planning is undertaken in the TWWHA for public safety; asset protection; Aboriginal cultural practices and values; and management of natural values and processes.

Management Action

Develop a holistic fire plan for the TWWHA.
Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project (2016).

Recommendation 1 – Comprehensive fire management planning

Clear, well-defined objectives for fire management should be incorporated into a Fire Management Plan for the TWWHA. These objectives should identify how fire management (fire suppression, ‘let go’ and management fires) will be used to protect and conserve the natural and cultural heritage values in the TWWHA.

The Fire Management Plan for the TWWHA should clearly set out the circumstances in which priority will be given to protecting the Outstanding Universal Value of the TWWHA over built assets within its boundaries.

The Tasmanian Wilderness World Heritage Area Fire Management Plan (hereafter referred to as the Plan) is a strategic level plan that will sit alongside, and where inconsistent, prevail over the Regional Strategic Fire Management Plans. The Plan will be reviewed five years from the date of publication.

1.2 Tasmanian Wilderness World Heritage Area Fire Management Plan objectives

The objectives of the Tasmanian Wilderness World Heritage Area Fire Management Plan are to:

- Avoid loss of fire-sensitive vegetation and other high conservation natural, cultural and historic values in the TWWHA.
- Maintain natural values through appropriate fire regimes.
- Enhance protection of critical infrastructure within the TWWHA.
- Provide opportunities for Aboriginal people to undertake cultural burning, free of onerous and culturally unacceptable requirements.
- Ensure no loss of life or injury as a result of bushfire or planned burning.

1.3 Plan status and authority

The Tasmanian Wilderness World Heritage Area Fire Management Plan is a non-statutory plan. The Plan’s geographic scope is in line with the Tasmanian Wilderness World Heritage Area Management Plan (2016), which applies to any land within the TWWHA that is reserved under the Nature Conservation Act 2002 and for which the Director is the managing authority, however the Plan has been extended to include the Southwest Conservation Area as this reserve impacts on fire management in the TWWHA. The Plan does not apply to freehold land subject to a conservation covenant under the Nature Conservation Act 2002, freehold land or vested land held by Hydro Tasmania, or any other freehold land where they occur within the TWWHA. It also does not apply to Permanent Timber Production Zone Land or land vested in the Aboriginal Land Council of Tasmania. Further details regarding this topic can be found in Section 1.6 of the TWWHA Management Plan (2016).

Considering that fire management in the TWWHA and surrounding tenure should not be managed in isolation, the fire management needs and objectives of other land classes within and adjacent to the TWWHA are represented in this Plan (Sections 8.4 Neighbours and 8.5 Other Tasmanian Wilderness World Heritage Area land managers). Where practical to do so, fire management activities should always be conducted in consultation and cooperation with other land managers within and adjacent to the TWWHA.
Parks and Wildlife Service firefighters setting up a sprinkler line for asset protection at Lake Rhona, 2019. (Photo: Chris Emm)
All these factors have created a landscape that stirs deep passions and a strong sense of belonging within the Tasmanian community. As such, decisions regarding management are often accompanied by a wide range of thoughts and opinions, which will vary depending on the objectives of the stakeholders.

2.1 State fire planning context

The Parks and Wildlife Service (PWS) is one of three statutory bushfire response agencies within Tasmania (the others being the Tasmania Fire Service (TFS) and Sustainable Timber Tasmania). All three agencies are signatories to the Inter-agency Bushfire Management Protocol.

2.1.1 Fuel Reduction Program

In 2014 the Tasmanian Government established the statewide Fuel Reduction Program, which is a co-ordinated program of fuel reduction burning across the state. The Tasmania Fire Service, Sustainable Timber Tasmania and the Parks and Wildlife Service are the key program partners. The Fuel Reduction Program has an annual budget of $9 million.

The Fuel Reduction Program is primarily focused on reducing risk to human settlement areas through Asset Protection Burns, therefore planned burns within the TWWHA were seldom eligible for funding through this program. In recognition of the importance of burning in the TWWHA for the protection of its Outstanding Universal Value, the critical infrastructure that occurs within and adjacent to the TWWHA, and the benefits of strategic landscape scale burning for community protection, some of the program funding is made available for burning within the TWWHA each year.

Figure 1 shows the relationship of the Tasmanian Wilderness World Heritage Area Fire Management Plan to the statewide context.
**FIGURE 1.** The relationship of the Tasmanian Wilderness World Heritage Area Fire Management Plan to the statewide fire planning framework.
2.1.2 National Parks and Reserves Management Act 2002

The Parks and Wildlife Service (PWS) has responsibility to manage the public land that makes up the TWWHA in accordance with the National Parks and Reserves Management Act 2002. This Act requires, amongst other things, that management plans be prepared to indicate how the area is to be managed in order to protect and conserve the reserve estate, as well as fulfilling international obligations with regards to managing areas of World Heritage Area status.

Fire management is a particular function listed in the National Parks and Reserves Management Act 2002 that requires attention.

Section 30, subsection 1 of the National Parks and Reserves Management Act 2002 states the managing authority:

“for any reserved land for which there is a management plan is to manage that land for the purpose of giving effect to the management plan and in accordance with that plan; or for any other reserved land is to manage that land in a manner that is consistent with the purposes for which the land was reserved; and having regard to the management objectives for the class of that reserved land.”

2.1.3 Other policies, procedures and guidelines

Fire management in the TWWHA is conducted in accordance with the following legislation, policies, plans, procedures and guidelines or any subsequent documents that serve the same purpose.

- Tasmanian Emergency Management Arrangements.
- PWS Fire Management Policy (P-050).
- PWS Fire Planning Policy (P-055).
- PWS Planned Burning Policy and Procedures (P-052 and PR-052).
- PWS Bushfire Season Fire Action Plan.
- Fire Operations in Tasmania’s Parks and Reserves (PR-110).

2.1.4 Fire Management Area Committees

The State Fire Management Council is an advisory group to the State Fire Commission and includes representatives from PWS and Sustainable Timber Tasmania (STT). The State Fire Management Council provides support to Fire Management Area Committees (FMAC).

Fire Management Area Committees are statutory bodies established under the Fire Service Act 1979 that provide a forum for effective bushfire risk management for each of the state’s 10 Fire Management Areas. The principal aim of FMACs is to bring together a range of stakeholders that manage land across Tasmania and work collaboratively in strategically planning the reduction of bushfire risk. This includes activities such as managing vegetation fuels, reducing ignitions, increasing community safety and improving preparedness.

Bushfire Risk Management Plans

The primary role of an FMAC is to prepare a Bushfire Risk Management Plan (BRMP) for their Fire Management Area. These plans identify and assess community bushfire risks and prioritise strategic works in response to those risks, including areas for fuel-reduction burning. Bushfire Risk Management Plans are reviewed annually and the priorities they identify guide the implementation of the Fuel Reduction Program.

Representatives from PWS sit on each FMAC, however a primary focus of FMACs is community protection, particularly in the urban interface area. Thus, FMACs do not tend to focus on fire management in the TWWHA.
Fire management in the Tasmanian Wilderness World Heritage Area

The Parks and Wildlife Service use fire to manage the natural and cultural values of the TWWHA and to reduce fuels with the aim of reducing unplanned, predominately lightning, ignitions that can have a negative impact on TWWHA values as well as preventing the forward spread of a bushfire once it becomes established. Fire management activities aim to achieve the following strategies and outcomes:

- Protect fire sensitive natural, cultural and historic values from fire and extinguish bushfires that pose a threat to these values.
- Reduce the incidence of large bushfires in the TWWHA.
- Use fire to break up continuous layers of fuel, thereby creating a mosaic of different fuel loads across the landscape.
- Maintain vegetation communities within tolerable fire regimes.
- Co-ordinate amongst PWS, other management authorities within the TWWHA, and adjacent landholders.
- Protect people, particularly visitors, from bushfires.
- Engage with the local community about the purpose and requirement for fire management within the TWWHA.
- Comply with the Tasmanian Wilderness World Heritage Area Management Plan (2016).

2.1.5 Three year Tasmanian Wilderness World Heritage Area burn schedule

A key strategy of the Tasmanian Wilderness World Heritage Area Fire Management Plan is the introduction of a rolling three-year planned burning program. The three year TWWHA burn schedule will be developed and implemented to integrate the burning objectives of Aboriginal cultural burning, burning for asset protection, strategic fuel reduction burning and ecological management burning and covers the entire geographic area of the TWWHA and the Southwest Conservation Area.

2.1.6 Reserve Values Fire Protection Plans

Another key strategy the Plan identifies for the protection of natural and cultural values from the negative impacts of bushfires is the development of Reserve Values Fire Protection Plans. These plans will be developed for all high-value, fire-sensitive assets and set out fire protection strategies and tactics that can be implemented for protection.

2.1.7 Response plans

Response plans include the PWS Bushfire Season Fire Action Plan which outlines how PWS detects and responds to bushfires. The plan is reviewed annually and is a key response document. Emergency Response Plans are site-based plans centred on high visitation locations that detail how people will be either evacuated or managed when a bushfire threatens.
FIGURE 2. The Tasmanian Emergency Risk Assessment Guidelines risk scores based on likelihood x consequence (TERAG 2017).

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</table>

2.2.1 Risk based management

Managing fire in the TWWHA is assessed through a risk management framework. Appendix 2 considers the risks associated with bushfires and other PWS activities relevant to fire management in the TWWHA and the response strategies to be implemented. The Bushfire Risk Assessment Model (BRAM) is used to identify areas containing assets that are at risk from bushfires, and subsequently used to prioritise bushfire mitigation works. Reserve Values Fire Protection Plans (Section 5.4 Reserve Values Fire Protection Plans), will be used to document strategies and actions to mitigate the risks. In the TWWHA, planned burning is a primary risk mitigation strategy. Other measures, such as mechanical fuel removal or wetting vegetation through the installation of sprinklers may also be used. Tables 1 – 3 identify the highest priority sites for protection through a bushfire risk rating, which is based on likelihood x consequence (Figure 2; TERAG 2017). The Tasmanian Emergency Risk Assessment Guidelines define consequence for five different categories (people, economy, environment, public administration and social setting). A copy of this can be found in Appendix 9.

2.2.2 Potential fire management risks

Fire management activities are inherently risky, both in terms of the impact caused by planned fire escape, as well as the indirect risks of a lack of certainty as to the impact fire will have on the environment. It is common for fire management activities to become paralysed because of an overabundance of caution.

It is important to note that ‘doing nothing’ in terms of fire management is not an acceptable response, as this will lead to changes in ecosystems across the TWWHA, a loss of threatened species, a buildup of fuel loads that lead to even more destructive bushfires in the future and does not acknowledge the long history of the TWWHA as a cultural landscape managed through fire. As a result, a level of acceptable risk needs to be adopted.

Level of acceptable risk for planned burning

The objectives of fire management activities in the TWWHA are presented in Section 1.2 Tasmanian Wilderness World Heritage Area Fire Management Plan objectives.

In line with these objectives, risks associated with planned burning will be acceptable as long as strategies are in place to prevent the loss of life or injury, damage or destroy critical infrastructure or fire-sensitive natural, cultural and historic values. If damage does occur to any of the above, an after action review will be initiated and an adverse impacts assessment undertaken (Section 4.1.3 Post-burn evaluation).

This level of risk acceptance acknowledges that occasionally planned burns will burn beyond intended boundaries for a single operation. As long as the escape has been confined to fire-adapted vegetation, does not damage known values, and is able to be
brought under control this should not be considered unacceptable.

In some instances it may not be practicable nor desirable to burn within defined boundaries at all, and a mechanism to allow burns to run free, under appropriate conditions, within a low-risk geographic area, needs to be adopted and tolerated (for further information refer to Section 4.3 Landscape burning).

2.2.3 Values identification

The identification of values is required in order to plan, prioritise and mitigate fire risk, as well as identifying priority areas of where to concentrate efforts during a bushfire when the fire situation overwhelms available resources.

Aboriginal landscape

The Tasmanian Wilderness World Heritage Area comprises a range of diverse landscapes and environments in which the rich cultural heritage of Tasmanian Aboriginal people is preserved. Aboriginal people have lived in, used, managed and modified the landscapes of the TWWHA for at least 40,000 years. The physical evidence of this connection and the Aboriginal cultural values are evident in elements such as the vegetation types and coverage within the landscape, which were managed and modified by targeted burning regimes, and the Aboriginal cultural heritage objects, sites and places, which provide evidence of the long connection with the landscape. Aboriginal cultural values are also evidenced through the intangible knowledge held by Tasmanian Aboriginal people associated with the TWWHA, which includes stories, songs, dances, language, kinship, customs, ceremonies and rituals that form part of the ongoing cultural practices of Aboriginal people and are often associated with physical sites, places and/or features within the landscape.

Aboriginal cultural heritage, including objects, sites, places, landscapes and their associated values are susceptible to significant damage or destruction from fire. Despite this, there is currently very limited understanding of the impacts of fire on Aboriginal cultural heritage in the Tasmanian Wilderness World Heritage Area. As such, a comprehensive and detailed list of the highest priority cultural values requiring protection from fires that occur in the TWWHA cannot be provided. The development of such a list will require further research to determine the impacts of fire, while engagement, consultation and input from Aboriginal people is crucial in order to develop a stronger understanding of the values. This work would enable more effective management of Aboriginal heritage sites, landscapes and values in the TWWHA to inform fire planning and decisions before, during and following bushfire events.

While a detailed and comprehensive list cannot be provided, Table 1 identifies some of the most highly significant sites requiring protection from bushfires. This list includes significant sites and places listed as part of the OUV of the TWWHA.

Natural values

Table 2 identifies the highest priority natural values requiring protection from bushfire that occur within the TWWHA. Many of the landscapes listed contain a mixture of both fire-sensitive and fire dependent components, however it is the fire-sensitive elements that are the focus of bushfire mitigation strategies. This list has been developed from a combination of the BRAM values at risk layer, the outputs of a workshop run by the Tasmania Fire Service and expert knowledge, with the consequence and likelihood values sourced from the BRAM (DPIPWE 2013) and informs many of the Asset Protection Zones (see Section 3.2 Fire Management Zoning).

Historic values

The following historic values have been identified by historic values specialists within the Parks and Wildlife Service as being of the highest priority for protection from bushfires that occur within the reserves that make up the TWWHA (Table 3). The likelihood scores have been sourced from the BRAM and the consequence scores come from Table 1 of the Tasmanian Emergency Risk Assessment Guidelines (TERAG 2017, Appendix 9).
### Table 1. Significant Aboriginal cultural values sites in the Tasmanian Wilderness World Heritage Area, their consequence level, likelihood of being impacted by bushfire, and overall bushfire risk score.

<table>
<thead>
<tr>
<th>VALUE</th>
<th>CONSEQUENCE</th>
<th>LIKELIHOOD</th>
<th>RISK SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>kuti kina</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>ballawinne</td>
<td>Major</td>
<td>Rare</td>
<td>High</td>
</tr>
<tr>
<td>wargata mina</td>
<td>Major</td>
<td>Extremely rare</td>
<td>Medium</td>
</tr>
</tbody>
</table>
**Table 2.** Natural values of the Tasmanian Wilderness World Heritage Area, their consequence level, likelihood of being impacted by bushfire, and overall bushfire risk score.

<table>
<thead>
<tr>
<th>VALUE</th>
<th>CONSEQUENCE</th>
<th>LIKELIHOOD</th>
<th>RISK SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Landscapes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cradle Mountain and Cradle Valley</td>
<td>Catastrophic</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Mount Anne massif</td>
<td>Catastrophic</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Walls of Jerusalem</td>
<td>Catastrophic</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Mount Field</td>
<td>Catastrophic</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Mount Bobs and the Boomerang</td>
<td>Catastrophic</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Pelion West and Mount Ossa</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>King William Range</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Western Arthur Range</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Mount Oakleigh</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Precipitous Bluff</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Sentinel Range</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Denison Range</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Cheyne Range</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Frankland Range</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Mount Olympus</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Raglan Range</td>
<td>Major</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Ironstone Mountain</td>
<td>Major</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Frenchmans Cap</td>
<td>Catastrophic</td>
<td>Rare</td>
<td>High</td>
</tr>
<tr>
<td>Du Cane Range</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Eastern Arthur Range</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Adamsons Peak</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Hartz Mountains</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Poimena Hills</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Maxwell River</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Denison River</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Greystone Bluff</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Davey River</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Nelson River</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Ironbound Range</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Upper Gordon and Franklin Rivers</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Lower Gordon and Kelly Basin</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Feature</td>
<td>Impacted by</td>
<td>Frequency</td>
<td>Severity</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>High Dome</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Loddon Range</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Snowy Range</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Mount Picton</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Weld Ridge</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>Wanderer River</td>
<td>Major</td>
<td>Unlikely</td>
<td>High</td>
</tr>
<tr>
<td>South Picton Range</td>
<td>Major</td>
<td>Rare</td>
<td>High</td>
</tr>
<tr>
<td>Pindars Peak</td>
<td>Major</td>
<td>Rare</td>
<td>High</td>
</tr>
<tr>
<td>Birches Inlet</td>
<td>Major</td>
<td>Rare</td>
<td>High</td>
</tr>
<tr>
<td>Spero River</td>
<td>Major</td>
<td>Rare</td>
<td>High</td>
</tr>
<tr>
<td>Prince of Wales Range</td>
<td>Moderate</td>
<td>Likely</td>
<td>High</td>
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</tbody>
</table>

**Species**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Impacted by</th>
<th>Frequency</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange-bellied parrot breeding ground</td>
<td>Catastrophic</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Palaeoendemic species</td>
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<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Lomatia tasmanica</td>
<td>Catastrophic</td>
<td>Unlikely</td>
<td>Extreme</td>
</tr>
<tr>
<td>Miena Jewel Beetle</td>
<td>Major</td>
<td>Likely</td>
<td>Extreme</td>
</tr>
<tr>
<td>SITE</td>
<td>EASTING/NORTING*</td>
<td>CONSEQUENCE</td>
<td>LIKELIHOOD</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>Waldheim Chalet</td>
<td>412020/5389801</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Hut 1 – Lake Ball (north)</td>
<td>441109/5367436</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Mount Kate House</td>
<td>412604/5390161</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Blandfordia Alpine Club</td>
<td>412705/5390165</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Narcissus Hut and Ranger’s Hut</td>
<td>425618/5348435</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Sir John Falls Hut</td>
<td>392468/5286099</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Lake Fenton Hut</td>
<td>469399/5274957</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Lake Nameless Hut</td>
<td>453187/5380405</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Claytons House</td>
<td>429615/5197487</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Old Pelion Hut</td>
<td>419911/5369083</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Basil Steers Hut No. 3</td>
<td>426004/5373337</td>
<td>Major</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Dixons Kingdom Hut</td>
<td>442635/5368990</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Pelion Copper Mine (and hut)</td>
<td>419912/5369083</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Basil Steers Hut No. 1</td>
<td>427767/5363761</td>
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<td>Du Cane Hut</td>
<td>425538/5360432</td>
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<td>Rare</td>
</tr>
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<td>Junction Lake Hut</td>
<td>432693/5358502</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Lake Meston Hut</td>
<td>435587/5361773</td>
<td>Major</td>
<td>Rare</td>
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<tr>
<td>Hobart Walking Club Hut</td>
<td>466654/5274012</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Melaleuca (SW Conservation Area)</td>
<td>432394/5192202</td>
<td>Major</td>
<td>Rare</td>
</tr>
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<td>Rose Adams Cottage</td>
<td>491426/5174666</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Howes Hut</td>
<td>430613/5380784</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Hut No. 2 / Kerrisons Hut</td>
<td>445268/5372223</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Echo Point hut and Jetty</td>
<td>428685/5345023</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Government Huts</td>
<td>467238/5273772</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Trappers Hut</td>
<td>438018/5373793</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Lake Newdegate Hut</td>
<td>464030/5276882</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Kitchen Hut</td>
<td>412279/5385692</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Twilight Tarn Hut</td>
<td>464951/5277816</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Raglan Range Piners Hut</td>
<td>401880/5332511</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Yackandandah Hut</td>
<td>408276/5398687</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Location</td>
<td>Longitude/Latitude</td>
<td>Threat Category</td>
<td>Risk Category</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Reindeer Lodge</td>
<td>379966/5309813</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>Morleys Hut</td>
<td>443573/5270001</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td>East Pillinger</td>
<td>381038/5309615</td>
<td>Moderate</td>
<td>Rare</td>
</tr>
<tr>
<td>Red Shed</td>
<td>441737/5166994</td>
<td>Major</td>
<td>Very rare</td>
</tr>
<tr>
<td>Allisons Hut</td>
<td>460708/5369293</td>
<td>Major</td>
<td>Very rare</td>
</tr>
<tr>
<td>Braddon River Hut</td>
<td>373487/5312363</td>
<td>Major</td>
<td>Very rare</td>
</tr>
<tr>
<td>Cockle Creek Cemetery</td>
<td>491146/53174766</td>
<td>Moderate</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Sarah Island Group</td>
<td>372200/5305800</td>
<td>Moderate</td>
<td>Extremely rare</td>
</tr>
<tr>
<td>Maatsuyker Island Light Station</td>
<td>441251/5165947</td>
<td>Moderate</td>
<td>Very rare</td>
</tr>
</tbody>
</table>

* Geodetic Datum of Australia 1994
2.3 Fire research in the Tasmanian Wilderness World Heritage Area

The responses of TWWHA values to fire are not fully understood, however, a perfect knowledge of fire effects within any environment is an unobtainable aim. The current state of knowledge of fire dynamics within the TWWHA is sufficient to implement a highly effective and ecologically beneficial planned burning program and bushfire response strategy. Nevertheless, an ongoing program of scientific research and monitoring provides vital information that assists PWS to implement an adaptive management approach to fire management, and therefore should be an ongoing part of fire management in the TWWHA.

As it is acknowledged that a complete understanding of the exact fire requirements for every species will never be obtainable, as a general principle, fire management within the TWWHA should be focused at the ecosystem level, rather than the individual species level. ‘Ecosystem’ in this context includes plants, animals, geofeatures and their interactions. An ecosystem approach to fire planning assumes that fire regimes that maintain an ecosystem will similarly maintain its components. Nonetheless, the requirements of rare, threatened or otherwise significant species and other natural values is a key consideration in fire management planning.

To improve the knowledge base underpinning fire management, PWS fire managers work closely with values specialists within the Department of Primary Industries, Parks, Water and Environment’s (DPIPWE) Natural and Cultural Heritage Division, as well as fostering strong working relationships with external researchers and other Australian fire agencies in order to keep abreast of the latest research and developments. A key forum for building these relationships is the annual TWWHA Bushfire Research Group meeting, convened by DPIPWE. This group is comprised of TWWHA land managers and researchers from across a range of agencies and institutions. The TWWHA Bushfire Research Group provides an ideal forum to identify research needs and develop an implementation plan.

2.3.1 Climate change

Following the bushfires within the TWWHA in 2016, the Tasmanian government commissioned the Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project (Press 2016). This project resulted in a number of other reports that examined the impact of climate change projections on fire management in the TWWHA, and are listed below:

- Tasmanian Wilderness World Heritage Area Natural Values Climate Change Adaptation Strategy 2021-2031 (DPIPWE 2020c).
- An assessment of the viability of prescribed burning as a management tool under a changing climate (Harris et al. 2018).
- Impact of changes in lightning fire incidence on the values of the Tasmanian Wilderness World Heritage Area (Kirkpatrick et al. 2018).
- Impact of climate change on weather-related fire risk factors in the Tasmanian Wilderness World Heritage Area (Love et al. 2017).

The Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project (Press 2016) made several recommendations regarding fire management in the TWWHA. This plan addresses a number of these recommendations and the relationship between the Press report recommendations and this Plan can be seen in Appendix 4.

2.3.2 Monitoring and evaluation

Fire Impacts on Biodiversity Values in the Tasmanian Wilderness World Heritage Area: Monitoring Strategy 2020-2025 (DPIPWE 2020a) provides two key metrics for monitoring and evaluating the success of fire management in the TWWHA. These are:

- Minimise the area of fire-sensitive species habitat and vegetation communities impacted by fire.
- Ensure that less than 20% of the TWWHA and of each Fire Landscape Region (see Section 4.2) is outside the recommended tolerable fire regimes defined for constituent vegetation communities.
In addition, this Plan recommends the development of a comprehensive burn evaluation process (Section 4.1.3) in order to measure the success of the burn program in meeting planned burn objectives.

1 **Key Desired Outcome:**
Research needs are identified, prioritised and implemented as resources allow.

**Management Action:**
1.1 Continue annual meeting of the Bushfire Research Group and develop and maintain relationships with academic institutions.

2 **Key Desired Outcome:**
Knowledge of climate change informs and improves changing fire risk and associated fire management practices.

**Management Action:**
2.1 Keep abreast of climate change research through relationships with academic institutions, other fire agencies, and through the Bushfire Research Group.

3 **Key Desired Outcome:**
Continuous improvement in fire management through linking management and research within an adaptive management framework.

**Management Action:**
3.1 Fire research to be targeted at addressing risks (Appendix 2).
3.2 Adopt the monitoring approach recommended in *Fire Impacts on Biodiversity Values in the Tasmanian Wilderness World Heritage Area: Monitoring Strategy 2020-2025* in order to measure the success of fire management in the TWWHA.
3. Planning tools

3.1 Tools

There are a number of decision support tools at the disposal of Tasmanian fire managers to assist in the planning and management of fire.

3.1.1 Aboriginal Heritage Register

The Aboriginal Heritage Register is a database of Aboriginal heritage places and objects which are of significance to the Aboriginal people of Tasmania. Currently there are over 13,000 known places and objects of significance listed on the Register. The Register is not publicly accessible as it contains culturally sensitive information but is an important tool for DPIPWE fire managers in ensuring the effective management of Aboriginal cultural values.

3.1.2 TASVEG

TASVEG is a statewide digital map of Tasmania’s vegetation. TASVEG describes and maps over 150 vegetation communities, including native vegetation assemblages and human modified landscapes. Pyrke and Marsden-Smedley (2005) grouped TASVEG communities into three themes useful to fire managers. These are:

- **Fire attributes categories** - broad groups of similar vegetation communities, such as dry sclerophyll forest or heathland.
- **Fire sensitivity** - classed as low, moderate, high, very high and extreme.
- **Flammability** - classed as low, moderate, high and very high.

These fire attributes underpin many of the planning tools used by fire managers across Tasmania. In order that they are updated and maintained along with TASVEG updates, an Ecological Data Technical Committee has been formed with representation from PWS, Natural and Cultural Heritage (NCH), TFS and STT. Natural and Cultural Heritage will remain the custodians of this data.

3.1.3 Natural Values Atlas

The Natural Values Atlas (NVA) is an authoritative database that houses geographic data on flora, fauna, geodiversity and soil survey data. The NVA can be used to produce a Natural Values Report, which brings together several data sets and provides information that can be used for desktop assessments of natural values for specific areas.

It needs to be noted that the NVA over-represents records from areas that are easy to access and survey. Also, there are large parts of Tasmania that have not been surveyed for flora, fauna, geodiversity and soils.

3.1.4 Bushfire Risk Assessment Model

The Bushfire Risk Assessment Model (BRAM) is a GIS tool used to assist in the objective identification of risk based on likelihood and consequence. The four components that form the basis of the BRAM are:

- Fire behaviour potential (likelihood).
- Ignition potential (the likelihood of a fire starting).
- Suppression capability (the likelihood of controlling a bushfire).
- Values at risk (consequence).

Combining the individual scores of the likelihood and consequence grid, the BRAM produces a score which indicates the overall level of risk. Risk is displayed in four levels: low, moderate, high and extreme. The Bushfire Risk Assessment Model is updated annually.

3.1.5 Bushfire Operational Hazard Model

The Bushfire Operational Hazard Model (BOHM) utilises fuel data from the BRAM, along with daily weather data from the Bureau of Meteorology, in order to produce daily forecasted fire behaviour indices. The Bushfire Operational Hazard Model is used to pre-position resources to areas that pose a high fire risk based on the forecast.
FIGURE 2. An example of the Tasmanian bushfire risk calculated from the Bushfire Risk Assessment Model for 2019/2020.

**Legend:**
- Blue: Very low (1)
- Green: Low (2)
- Yellow: Moderate (3)
- Orange: High (4)
- Red: Extreme (5)
3.1.6 Planned Burn Activity Manager

A Parks and Wildlife Service planned burn database is in the process of being developed. The database will store information on burn units, approval progression, planned burn boundaries, post-burn assessment boundaries and flag when burn units are coming up for treatment, based on the zoning attribution of the unit and the ideal fire regime for that unit.

3.1.7 Burn Risk Assessment Tool

The Burn Risk Assessment Tool (BRAT) provides a standardised framework for assessing planned burning risks versus benefits, to guide the preparation of Operational burn plans. The Burn Risk Assessment Tool allows data to be entered and calculations made, applying the risk assessment framework of likelihood x consequence to assess the chance of a planned burn escaping against the potential of an escape to do damage. The Burn Risk Assessment Tool incorporates control measures to reduce the probability of escape and the potential benefit of the burn in meeting fire management objectives. The Burn Risk Assessment Tool then provides a burn risk score for the likelihood of the fire escaping, the risk of the burn causing damage and the level of benefit that could potentially be gained.

The Burn Risk Assessment Tool allows for the practitioner to identify the criteria that have the greatest influence on the level of fire risk and hence how the risk may be reduced. The practitioner can then modify selected criteria to determine which parameters are elevating the burn’s risk and which could be modified to minimise the risk. The Burn Risk Assessment Tool Overall Risk Rating determines the level of approval required for a burn and can be found in Planned Burning Policy and Procedures (P-052 and PR-052).

3.1.8 Planned Burn Decision Support Tool

The Planned Burn Decision Support Tool (PB-DST) can be used for the operational stage of planned burning, in order to assist with decision making. The Planned Burn Decision Support Tool provides an assessment of relative risk based on current and forecast weather, and incorporates weather streams up to seven days out, meaning that the PB-DST cannot be used further than seven days in advance of the burn.

The Planned Burn Decision Support Tool is not a mandatory part of the pre-burn planning process (Planned Burning Policy and Procedures (P-052 and PR-052)), but rather a tool that can assist in decision making when required. This may be when the decision to go ahead with a burn is borderline or the burn is in a sensitive area requiring extra documentation.

The Planned Burn Decision Support Tool can also be used when planning and implementing backburns.

3.1.9 Firescape-SWTAS

Firescape-SWTAS is a landscape scale simulation model that enables the testing of different planned burning treatments on management objectives. Firescape-SWTAS was designed specifically for the landscape and vegetation characteristics of south-west Tasmania (King 2006). The Climate Futures group at the University of Tasmania has updated the original Firescape-SWTAS. Updates include:

- An expanded geographic area (now encompasses the entirety of the TWWHA).
- Climate change projections for the TWWHA out to 2100.
- An updated vegetation transitions model.

The way in which Firescape-SWTAS will be incorporated into the planned burning program in the TWWHA is addressed further in Section 4.1 Planned burning and Appendix 6.

4 Key Desired Outcome:

Fire planning tools are maintained and continue to be developed in order to assist with planned burning and bushfire response.

Management Action:

4.1 Continue to develop and maintain fire planning tools.
3.2 Fire management zoning

Fire management zoning is a high level tool to assist in fire planning.

A number of zones have been recognised within the TWWHA for fire management purposes. Each zone has a fire management objective that matches the intent of the zone.

The zones identified in this Plan have been produced through a semi-automated process in order to accommodate annual updates.

3.2.1 Asset Zone

Objective
To protect the asset from the deleterious effects of bushfire.

Definition
An area encompassing asset(s) of high value or importance. Assets include built assets (infrastructure), natural assets (fire sensitive ecosystems, species or landforms) and cultural assets (Aboriginal heritage).

Examples include palaeoendemic species, Pleistocene caves and power stations.

3.2.2 Asset Protection Zone

Objective
The objective of Asset Protection Zones (APZ) is to provide a reduced fuel level around Asset Zones in order to protect assets within those zones from potential bushfire.

Definition
An area of high strategic importance to protect values in Asset Zones. These will be areas generally adjacent or upwind from locations of highly significant values in Asset Zones and managed for fuel reduction. There are two levels of Asset Protection Zones. Further details on Asset Protection Zones can be found in Appendix 7.

Asset Protection Zone 1

Asset Protection Zone 1 (APZ1) occurs within 50 metres of the Asset Zone and is an area that has been recognised as requiring intensive fuel modification. Modification may refer to a number of strategies, such as mowing, vegetation clearing, surface hardening or fuel moisture manipulation (e.g. sprinklers). Asset Protection Zone 1 is not required for all Asset Zones and will generally be more appropriate to built assets.

Intensive fuel modification will mostly be inconsistent with the management aims of Wilderness Zones (refer to the Tasmanian Wilderness World Heritage Area Management Plan (2016). This Plan has included APZ1 around Asset Zones within Wilderness Zones as future conditions under climate change may necessitate different approaches to protection of irreplaceable fire-sensitive assets, in particular, assets of natural or cultural value that would be destroyed by bushfire.

Asset Protection Zone 2

Asset Protection Zone 2 (APZ2) occurs adjacent to the Asset Zone and may extend a number of kilometres away from the asset, with the area encompassed in the APZ2 based on prevailing wind direction, topography and fire history. Asset Protection Zone 2 mapping includes areas of non-treatable vegetation, however, only the treatable vegetation will be subjected to fuel modification. Asset Protection Zone 2s are not final boundaries for individual burning blocks but show where one, several or many burn blocks are to be determined.

An APZ2 will be subject to less intense fuel modification than an APZ1, with the primary means of fuel modification being planned burning. The fuel reduction regime for APZ2 will be more intense than for an equivalent ecosystem outside of an APZ as protection of the Asset Zone is the primary management goal of this area.
3.2.3 Strategic Fire Management Zone

Objective
The objectives of Strategic Fire Management Zones (SFMZ) are to:

- Minimise the risk of large bushfires by providing areas of low fuel loads across the landscape that prevent the forward spread, or assist in the containment, of bushfires.
- Mitigate the risk of bushfires negatively impacting on visitors and reserve values by reducing the fire intensity.
- Provide the necessary fire regimes for ongoing healthy ecological functioning.

Definition
A management area that will increase the likelihood of controlling a bushfire within, or the forward spread through the area, along with minimising the potential for a bushfire to achieve a size greater than 5,000 ha. Strategic Fire Management Zones will be located in fuel types of high or greater flammability and take into consideration landscape pinches and anchor points. Strategic Fire Management Zones are not final boundaries for individual burning blocks but show where one, several or many burn blocks are to be determined.

3.2.4 Land Management Zone

The objective of fire management within Land Management Zones (LMZ) is to maintain appropriate fire regimes for landscape vegetation communities, species diversity and cultural heritage. Land Management Zones will have secondary zones within them with specific fire management requirements for ecological and cultural purposes.

Ecological Management Zone
An area of complex fire management issues. Areas zoned for ecological management contain ecosystems with very specific fire management needs and will require their own specific fire management statement that guides the burning regime. For many areas zoned for ecological management, especially those on the Central Plateau, only small areas of fire-adapted communities would be subject to fire management. Examples of some of the complex fire management issues include pencil pines occurring in grassland or buttongrass, which require low-intensity burning to reduce the fuel load around that asset; or orange-bellied parrots, which require a fine-grained mosaic burning regime in order to maintain food supplies. Ecological Management Zones will often be the areas where experimental and adaptive management will be required.

Cultural Zone
Cultural Zones can be used to define areas of value to the Aboriginal communities for cultural burning (proposed).

3.2.5 Fire management zoning ongoing maintenance

The Tasmanian Wilderness World Heritage Area fire management zoning will be updated annually in order to reflect changes in known distribution of values or to reflect updated information on the fire-sensitivity and values of assets.

Asset Zones are based on the Biodiversity Consequence Layer each bushfire season detailing critical infrastructure, PWS life, and human settlement areas that require protection. PWS life refers to areas where large numbers of people are likely to be congregated, such as Visitor Centres and hut and campsites on major walking tracks. All values data includes the Southwest Conservation Area.

3.2.6 Public access to zoning

3.2.7 Ecological Management Zone

The following Ecological Management Zones have been identified as needing individual fire management statements due to the complex fire management issues involved.

- Melaleuca (Orange-bellied parrot habitat and *Lomatia tasmanica*).
- Lake McKenzie recovering ecosystem.
- Cradle Mountain.
- Central Plateau unburnt ecosystems.
- Central Plateau recovering ecosystem.
- Walls of Jerusalem unburnt ecosystem.
- February Plains montane grasslands.
- Lake Augusta montane grasslands.
- Louisa Bay peat mounds.
- Southwest Conservation Area peat mounds.
- Florance Creek peat mounds.

5 Key Desired Outcome:

There is no loss of fire-sensitive vegetation and other high conservation natural, cultural and historic values in the TWWHA.

Management Action:

5.1 Conduct annual update of TWWHA fire management zoning.

5.2 Make Fire Management Zones available as a public layer on LISTmap.

5.3 Develop fire management statements for the Ecological Management Zones identified.
Parks and Wildlife Service firefighter returning to base.

(photo: Stu Gibson)
Parks and Wildlife Service firefighters walking along the Mount Anne Track, 2019. (Photo: Stu Gibson)
4. Prevention

4.1 Planned burning

The Parks and Wildlife Service undertake planned burning in the TWWHA in order to create areas of lower fuel loads, which assist in bushfire containment, whilst at the same time providing the necessary ecological services for fire adapted communities.

Planned burns will always achieve fuel reduction outcomes, even if conducted primarily for alternative objectives, such as ecological management. For that reason, planned burning will be addressed under the Prevention section, whilst at the same time addressing planned burning objectives that are not primarily focussed on fuel reduction.

The Plan stresses the importance of recognising the complexity of planned burning and discourages planning burns with single objectives. Most burns undertaken for fuel reduction purposes can have ecological benefits, and these should be maximised. Similarly, burns undertaken for ecological reasons, such as grassland burning, will have hazard reduction outcomes through reducing shrubs and the build-up of other flammable material.

The AFAC Bushfire Glossary defines prescribed (planned) burning as:

“The controlled application of fire under specified environmental conditions to a pre-determined area and at the time, intensity, and rate of spread required to attain planned resource management objectives. It is undertaken in specified environmental conditions.”

There are numerous terms used to describe the relationship between fire, vegetation, and other values. The terms that will be used in this plan are described below.

**Fire-sensitive** – natural, cultural and historic values that will be significantly damaged by any fire. In some cases the value may survive a single fire but is unlikely to persist after subsequent fires.

**Fire tolerant** – natural, cultural and historic values that are likely to persist in the presence of fire, however, may be eliminated if the tolerable fire intervals are exceeded.

**Fire-dependent** – natural and cultural values that persist only with periodic burning.

4.1.1 Planned burn process

The National Burning Project was a project commissioned by the Australasian Fire and Emergency Service Authorities Council (AFAC) and the Forest Fire Management Group (FFMG) in order to:

“Use a national approach to reduce the bushfire risk to the Australian and New Zealand communities by the comprehensive management of prescribed burning at a landscape level that balances operational, ecological and community health risks.”

The national guidelines developed recognise five phases of the planned burn process (Figure 4).

**FIGURE 4. National burning project planned burn process.**
The Parks and Wildlife Service have also developed a number of policies and procedures for planned burning that pre-date the national guidelines. The most relevant of these are:

- **Policy – Fire Management (P-050).**
- **Fire Planning Policy (P-055).**
- **Planned Burning Policy and Procedures (P-052 and PR-052).**

Any updates to these policies and procedures should be conducted with consideration of the national guidelines developed as part of the National Burning Project.

### 6 Key Desired Outcome:

A holistic TWWHA planned burning program is implemented that incorporates asset protection, strategic fire management, ecological and cultural burning and is planned across the geographic area of the TWWHA in order to provide the best possible protection from bushfire.

#### Management Action:

6.1 Update current Parks and Wildlife Service fire management policies and procedures for planned burning with consideration to the National Burning Project national guidelines.

### 4.1.2 Planned burning objectives

Planned burning is used to mitigate risk through a reduction in a hazard (fuel) as well as achieving ecological or cultural outcomes through the application of an appropriate fire regime. Planned burning objectives are aligned with the objectives of the Fire Management Zone in which they occur.

Broad objectives for planned burning in the TWWHA are to:

- Modify fuel characteristics (quantity and arrangements) in order to reduce the negative impacts of bushfire on fire-sensitive natural, cultural and historical assets.
- Maintain biodiversity by applying appropriate fire regimes.
- Maintain the TWWHA as a cultural landscape through the application of cultural burning.

Specific objectives for planned burning within the TWWHA are to burn an average of at least five per cent of moorland per year on a 10 year rolling average and for less than 20 per cent of treatable vegetation to be outside its tolerable fire interval within each landscape region (Figure 5; Modified from DPIPWE 2015). See Appendix 6 for more detail on the fire planning process for the TWWHA.

#### Treatable vegetation communities

Treatable vegetation communities (also known as treatable fuels) are based on the fire attributes layer derived from an early version of TASVEG and published in Tasforests (Pyrke and Marsden-Smedley 2005). Only vegetation communities with a fire sensitivity rating of low were originally included in the treatable vegetation layer. This has been updated to reflect more recent releases of TASVEG, as well as incorporating some moderate flammability communities. An Ecological Data Technical Committee has been established with representatives from PWS, NCH, TFS and STT, in order to maintain the currency of the fire attributes data set in line with changes to TASVEG.

Treatable vegetation communities are defined as fire adapted TASVEG communities that can be subjected to planned burning (Appendix 8).

#### Tolerable fire intervals

The Department of Primary Industries, Parks, Water and Environment is currently developing tolerable fire intervals for TASVEG communities. The tolerable fire interval is the minimum and maximum time between successive fires under which species and processes characteristic of an ecosystem are likely to persist, thereby maintaining ecosystem identity and function. Tolerable fire intervals are based on accumulated
knowledge of the fire responses of individual species, most commonly plants.

**Biosecurity considerations during planned burning**

Biosecurity is discussed in more detail in Section 6.3 Biosecurity. Biosecurity refers to limiting the spread of weeds, pests and diseases and needs to be considered for both planned burning and bushfire suppression activities.

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### 7 Key Desired Outcome:

Natural values are maintained through appropriate fire regimes.

**Management Action:**

6.2 Keep up to date and review new technologies that will assist in better capturing burn extent.

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### 4.1.3 Post-burn evaluation

Each planned burn provides the opportunity to extend knowledge. The recording of fire behavior during the burn as well as burn outcomes in relation to objectives is required for each planned burn.

The following components should be part of any post-burn evaluation.

**Assessment of burn objectives**

Following the completion of the burn an assessment needs to be made against the burn objectives. Burn objectives need to match the objectives for each Fire Management Zone as well as include any specific objectives of the burn itself.

**Mapping of burn extent**

Mapping of the burn extent is key information that informs the fire history and consequent future burn program. For small burns, mapping can be conducted with a handheld GPS by walking the boundary. For large burns, the boundary may need to be mapped using aircraft.

As technology continues to advance, better options for capturing burn extent are likely to become available. Utilising technology such as high resolution satellite imagery or drone imagery should be a focus of ongoing review and research.

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**Management Action:**

6.3 Continue to develop a repeatable methodology for assessing burn patchiness and post-burn fuel hazard rating.

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**Assessment of treated proportion and burn patchiness**

Burn patchiness provides key information on both the level of risk reduction achieved by the burn as well as providing a useful assessment on the ecological value of the burn.

An assessment of burn patchiness needs to be undertaken at least a few weeks to a month after the burn, as it is not always immediately apparent what the impact of the burn on the vegetation is. Assessments of burn patchiness and post-burn fuel hazard ratings are difficult to assess and subjective but nonetheless informs planned burning success.

The Department of Primary Industries, Parks, Water and Environment is currently developing a fire severity mapping tool that will be useful for assessing burn patchiness and potentially post-burn fuel hazard ratings. The fire severity mapping tool is discussed further in Section 7.2.2 Fire severity mapping.

**Management Action:**

6.2 Keep up to date and review new technologies that will assist in better capturing burn extent.
Adverse impacts assessment

Any planned burn is associated with a degree of risk of an adverse outcome. An adverse outcome is considered to have happened when damage to a natural, cultural or built asset occurs. Adverse outcomes can also include events such as the fire intensity being different from anticipated, or an unexpected sensitivity in the burn block, such as organic soils above the dryness threshold. A burn that does one of these things but does not cause damage to an asset should not be considered to have had an adverse outcome (see Section 2.2.2 Potential fire management risks).

Fire Regimes for Nature Conservation in the Tasmanian Wilderness World Heritage Area (DPIPWE 2015) documents the process for conducting an adverse impact assessment. When adverse burn outcomes occur, an adverse impacts assessment is triggered, following which a field survey by appropriate scientific specialist staff is undertaken. An adverse impacts assessment should involve the following steps:

1. An initial assessment of potential damage to determine if triggers for further investigation are met. Assessment of triggers should be included in the post-burn completion of burn plan reports by PWS, relying on field observations and GIS analysis.

2. Further data collection and assessment by a Fire Management Officer and an appropriate NCH specialist to investigate concerns raised by step 1. This may involve desktop assessment, aerial surveys or ground based assessment of vegetation, fauna or landforms. The level of follow up investigation will vary depending on the degree of potential damage, time and resources available and the accessibility of the site.

The triggers for investigation of an adverse impacts assessment can be found in Table 4 of Fire Regimes for Nature Conservation in the Tasmanian Wilderness World Heritage Area (DPIPWE 2015).

Management Action:

6.4 Review Table 4 of Fire Regimes for Nature Conservation in the Tasmanian Wilderness World Heritage Area in order to better define thresholds and improve triggers.

Continuous improvement

Continuous improvement is a key part of any fire management program. A simple evaluation of each burn is conducted as part of the Operational burn plan. In addition to this, a more comprehensive post-burn evaluation should be undertaken from a subset of the burns completed each financial year.

This should include a detailed examination of the planned weather and site conditions against the actual weather and site conditions under which the burn was conducted. The aim of this would be to fine tune the parameters under which a burn can occur without posing a risk or causing damage, as well as to better understand ecological processes. For example, this information could provide useful data over time for understanding the fire intensity required to promote or suppress tea-tree from a moorland. Further information on monitoring of the planned burn program can be found in Fire Impacts on Biodiversity Values: Monitoring Strategy 2020–2025 (DPIPWE 2020a).

Management Action:

6.5 Ensure all post-burn evaluation data is captured on the fire history layer of the COP. This should include a burn patchiness measure, post-burn fuel hazard rating, final burn boundary and all comments.

6.6 Develop a comprehensive burn evaluation process that evaluates the prescribed versus actual weather and site conditions.

6.7 Carry out a comprehensive evaluation of 10 per cent of all planned burns conducted each financial year across a range of Fire Management Zones and vegetation types.


4.1.4 Constraints

Common constraints to conducting planned burns are:

**Operational**

- Suitable weather conditions and smoke dispersion.
- Availability of staff.
- Competition for resources when weather conditions are appropriate. This includes firefighters, aircraft and equipment, such as aerial incendiary machines.
- Threatened species planned burn prescriptions are conflicting (e.g. season for burning).
- Bushfire response.

**Administrative**

- Burn units identified and approved through the RAA process.
- Burn plans completed and approved.
- Authorities and permits.
- The TWWHA covers three PWS administrative regions, requiring a coordinated approach to planned burning.
- Funding for ongoing burning.

4.1.5 Solutions to address constraints

The Tasmanian Wilderness World Heritage Area spans three administrative regions, which means that coordination and collaboration is required to ensure a holistic approach to fire management, including planned burning, within the TWWHA. The Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project (Press 2016) and the Tasmanian Wilderness World Heritage Area Management Plan (2016) both recommend a ‘holistic fire management plan for the TWWHA’.

In order to achieve the objectives of the Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project and the Tasmanian Wilderness World Heritage Area Management Plan (2016) it is imperative that fire planning across the TWWHA maintains a coordinated approach. This will involve fire management staff who work within the TWWHA working together across PWS regional boundaries and liaising and coordinating with regional staff.

**Priority burn scoring**

In order to judiciously allocate resources for planned burning in circumstances where a resource shortage arises during the operational stage, each burn with an approved burn plan is given a priority score. Priority scoring is calculated from the burn objective determined by the Fire Management Zone (calculated based on the values class being afforded protection and burn size), a burn effectiveness location score (i.e. upwind or downwind of an asset), a burn effectiveness slope score, and a calculation of the BRAM score for the burn block.

Priority scoring currently gives the greatest weight to burns planned to protect community, life and the urban interface that occur within APZs. Considering the TWWHA contains very little community and urban interface areas, burns within the TWWHA have consistently been of a lower priority. Thus, other statewide priorities often deplete burns within the TWWHA of resources. The priority burn scoring matrix should be updated to better reflect contemporary PWS planned burning objectives, such as ecological burning and the protection of natural and cultural values.

**Firescape-SWTAS**

Firescape-SWTAS will be used for burn planning within the TWWHA. Pre-identifying burn blocks across the treatable vegetation of the TWWHA will be necessary as inputs. This will allow simulation of the effectiveness of various planned burning strategies under different bushfire ignition scenarios. This will assist in devising the most effective burn program across the whole of the TWWHA.
Management Action:

6.8 Identify burn units for all areas of treatable vegetation within the TWWHA and determine the appropriate fire regime for each burn unit based on the vegetation communities, asset protection priorities and fire management zoning. This is an input into Firescape-SWTAS.

6.9 Develop a whole of TWWHA, multi-year planned burn program across all three PWS regions.

6.10 Develop a layer for the COP or Planned Burn Activity Manager that stores all the TWWHA burn units and provides details on the recommended fire regimes, vegetation details of each unit, past fire history and includes photos, and the presence of any values or monitoring sites.

6.11 Increase resources to ensure that the planned burn program for the TWWHA is implemented.

6.12 Regularly assess the effectiveness of the holistic TWWHA planned burning program in achieving aims.

6.13 Update the priority burn scoring matrix, to provide a priority burn score for burn units within the TWWHA and increase the weight on ecological burning and the protection of natural and cultural values.

6.14 Operationalise Firescape-SWTAS, in order to help design the TWWHA planned burn program.

4.2 Landscape fire regions

In order to ensure a diversity of fire intervals at an appropriate scale the TWWHA has been separated into 14 landscape fire regions (Figure 5). These landscape regions are based on natural fire boundaries, such as river valleys and mountain ridges, as well as geology, and are more thoroughly described in Balmer and Styger (2020).

The landscape fire regions will be the basis for reporting against TWWHA fire management and planned burning objectives, specifically:

"to burn an average of at least five per cent of moorland per year on a rolling average and for less than 20 per cent of treatable vegetation to be outside of tolerable fire intervals."

Fire simulation modelling by King et al. (2006) found that a strategic burn program that treated at least five per cent of moorland per year resulted in significantly fewer and less extensive fires.

This means that five per cent of moorland within each landscape region* should be burned each year. This will help to ensure that there is a distribution of fire ages across the TWWHA and that planned burning will be conducted across the TWWHA landscape. Moorland within APZs will be burnt more regularly than moorland within SFMZs and LMZs, ensuring that there is a different moorland age structure across the TWWHA.

Non-moorland treatable vegetation will also require burning in line with the tolerable fire intervals for each ecosystem in order to meet this objective.

The outputs of Firescape-SWTAS will allow the level of burning within each landscape region to be further refined and incorporated into the adaptive management system.

* This target is indicative only. Some landscape fire regions contain very little moorland and it will be likely that the entirety of the moorland will be burnt within only one or two burns. Therefore, it will not be necessary to burn moorland within these landscape fire regions until an appropriate fire age is reached as determined by the Fire Management Zone these burn blocks fall into.
FIGURE 5. Map of landscape fire regions across the TWWHA.
Table 4. Total area of moorland, the area that equates to five per cent of moorland that would be required to be burnt each year in order to meet the planned burning objective, and the total remaining treatable fuels within each landscape fire region.

<table>
<thead>
<tr>
<th>LANDSCAPE FIRE REGION</th>
<th>MOORLAND</th>
<th>FIVE PER CENT OF TOTAL MOORLAND</th>
<th>TOTAL REMAINING TREATABLE FUELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Plateau</td>
<td>556 ha</td>
<td>28 ha</td>
<td>35,007 ha</td>
</tr>
<tr>
<td>Cradle</td>
<td>14,043 ha</td>
<td>702 ha</td>
<td>13,062 ha</td>
</tr>
<tr>
<td>Crossing</td>
<td>66,434 ha</td>
<td>3322 ha</td>
<td>20,803 ha</td>
</tr>
<tr>
<td>Franklin-Lower Gordon</td>
<td>35,583 ha</td>
<td>1779 ha</td>
<td>20,386 ha</td>
</tr>
<tr>
<td>Giblin</td>
<td>63,183 ha</td>
<td>3159 ha</td>
<td>12,713 ha</td>
</tr>
<tr>
<td>Huon Valley</td>
<td>17,613 ha</td>
<td>881 ha</td>
<td>10,127 ha</td>
</tr>
<tr>
<td>Lyell Highway</td>
<td>16,723 ha</td>
<td>836 ha</td>
<td>17,936 ha</td>
</tr>
<tr>
<td>Macquarie Harbour</td>
<td>70,202 ha</td>
<td>3510 ha</td>
<td>20,793 ha</td>
</tr>
<tr>
<td>Mount Field</td>
<td>252 ha</td>
<td>13 ha</td>
<td>1373 ha</td>
</tr>
<tr>
<td>South Coast</td>
<td>42,631 ha</td>
<td>2132 ha</td>
<td>16,249 ha</td>
</tr>
<tr>
<td>Southeast</td>
<td>3448 ha</td>
<td>172 ha</td>
<td>16,735 ha</td>
</tr>
<tr>
<td>Styx-Weld</td>
<td>7286 ha</td>
<td>364 ha</td>
<td>10,271 ha</td>
</tr>
<tr>
<td>Upper Derwent</td>
<td>8130 ha</td>
<td>407 ha</td>
<td>13,761 ha</td>
</tr>
<tr>
<td>Upper Gordon</td>
<td>62,049 ha</td>
<td>3102 ha</td>
<td>25,610 ha</td>
</tr>
<tr>
<td>Total</td>
<td>408,133 ha</td>
<td>20,407 ha</td>
<td>234,872 ha</td>
</tr>
</tbody>
</table>
FIGURE 6. An example of the moorland and remaining treatable fuels within the South Coast landscape fire region.
4.3 Landscape burning

Some areas of the TWWHA are well suited to a landscape approach to burning. Landscape burning refers to the identification of a large area appropriate for burning and targeting appropriate vegetation within this area. Landscape burning will result in a more natural burn mosaic across the landscape, increasing the ecological benefits of the TWWHA burn program and at the same time reducing fuels across the landscape.

The principles of landscape burning have similarities with the type of burning undertaken by Aboriginal people.

8 Key Desired Outcome:

Landscape burning becomes a part of the TWWHA planned burn program.

Management Action:

8.1 Update relevant planned burning policies and procedures to incorporate landscape burning and identify appropriate areas within the TWWHA where landscape burning can occur.

4.4 Aboriginal cultural burning

The Tasmanian government is currently developing a Cultural Burning Policy, which will provide the framework to enable Aboriginal people to conduct their traditional burning practices on reserved land, including the TWWHA.

In order to progress the development of Aboriginal burning in the TWWHA, the Plan recognises three types of burning practices. These are:

- Contemporary burning, which refers to current planned burning practices undertaken by agencies such as the Parks and Wildlife Service and subject to policies and procedures such as Planned Burning Policy and Procedures (P-052 and PR-052) and Planned Burning in Tasmania: Operational Guidelines and Review of Current Knowledge (Marsden-Smedley 2009).
- An amalgamation of Aboriginal cultural burning and contemporary burning, where Aboriginal people are involved in the planning and implementation of planned burning activities, alongside PWS fire management staff, using contemporary equipment and techniques, such as aerial ignition.

The Plan recognises that in many locations, low-intensity Aboriginal cultural burning conducted under appropriate conditions is close to risk free and Aboriginal people should be able to undertake this in a manner and a timing of their choosing.

As an interim measure and in order to facilitate this outcome until the development of the Cultural Burning Policy, Table 5 presents the conditions under which Aboriginal people can conduct traditional burning within treatable vegetation communities (Appendix 8) of the TWWHA.

Aboriginal Heritage Tasmania are currently working with the Aboriginal community on a pilot program looking at shared values and the development of Healthy Country plans for parts of the TWWHA. If successful, these plans could provide the ideal locations to commence the reintroduction of Aboriginal burning into the TWWHA.
Table 5. Weather and moisture parameters under which Aboriginal burning can take place.

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>BUTTONGRASS</th>
<th>GRASSLAND</th>
<th>DRY FOREST</th>
<th>HEATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Dryness Index*</td>
<td>&lt;10</td>
<td>&lt;15</td>
<td>&lt;15</td>
<td>&lt;15</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>&gt;40</td>
<td>&gt;50</td>
<td>&gt;60</td>
<td>&gt;60</td>
</tr>
<tr>
<td>Wind speed (2 m)</td>
<td>&lt;5</td>
<td>&lt;20</td>
<td>&lt;20</td>
<td>&lt;5</td>
</tr>
</tbody>
</table>

* Or equivalent
4.5 Campfires

The majority of the TWWHA is a Fuel Stove Only area, meaning that campfires are not allowed, except at a few designated sites. Fuel Stove Only areas were first implemented across the TWWHA in the early 1990s in response to a number of escaped campfires and the impacts of lighting fires on combustible organic soils. As a result of the Fuel Stove Only policy, as well as the Minimal Impact Bushwalking and Leave No Trace education campaigns, the prevalence of human-caused fires in the TWWHA was dramatically reduced.

Two notable exceptions to the Fuel Stove Only policy occur within remote areas of the TWWHA, along the South Coast Track. Campfires have historically been allowed at Little Deadmans Cove and Surprise Bay camping sites. Allowing people to light campfires at these sites poses a significant risk of a fire escaping as PWS has no regular presence in these areas to ensure that campfires are used sensibly or that they have been properly extinguished. Furthermore, these two sites are adjacent to vegetation that is often dry during summer. A number of sites where campfires have traditionally been allowed are now part of the TWWHA following the 2013 boundary extension. The Tasmanian Wilderness World Heritage Area Management Plan (2016) suggests a review of the provision of designated fireplaces across the TWWHA. It is out of scope for this Plan to address that issue, and this fire management plan reiterates the need for this action to be undertaken. Two areas of particular concern are Cockle Creek and Lake King William.

Hydro Tasmania also manages campsites within the TWWHA, at which campfires are allowed.

Some areas within the TWWHA are well suited for the use of campfires, being of a low flammability fuel type and containing well-constructed designated fireplaces in Visitor Services Zones where PWS are often present.

---

9 Key Desired Outcome:
Aboriginal people are conducting low-intensity cultural burning within the TWWHA under conditions that pose negligible risk of impact to fire-sensitive values.

Management Action:
9.1 Continue to develop and measure the success of Table 5 and incorporate into the Cultural Burning Policy.

10 Key Desired Outcome:
Aboriginal people are provided opportunities to be involved in contemporary fire management activities, including planned burning, in order to better incorporate Aboriginal burning practices into PWS practices, and move towards joint management of the TWWHA.

Management Action:
10.1 Provide training pathways for Aboriginal staff to be involved in higher level bushfire response roles. This can involve recognising prior cultural learning and knowledge.
During the warm and dry months it will be necessary to have seasonal restrictions for campfire use as the danger of campfires igniting bushfires increases substantially. Seasonal campfire restrictions will be determined in accordance with the PWS Campfire Management Strategy. Total Fire Ban days as declared by the Tasmania Fire Service apply across all land tenures and prevail over any local campfire guidance.

At other locations, where camping occurs, management may deem that campfires are only allowed in fire pots in designated camping areas where required for responsible campfire management and to reduce the impact of campfires on the environment.

The Tasmanian Wilderness World Heritage Area Fire Management Plan defines a fire pot as:

“A free standing portable container that is enclosed with the objective of containing a fire. The fire pot is for the use of combustible materials such as wood, wood products and coal.”

An increase in illegal campfires, particularly within the Walls of Jerusalem National Park, has been observed in recent years. The presence of track rangers, campsite hosts or other compliance staff will help to reduce and prevent this illegal activity. Track rangers have the additional benefit that they can assist with visitor safety during emergencies, are useful observers for fire detection and can help with imparting important education information to visitors, which ultimately helps with reserve land management.

11 Key Desired Outcome:
Campfires are allowed for warmth and enjoyment in designated areas where the environmental and bushfire risks are low and are regularly patrolled by rangers.

Management Action:

11.1 Review the Fuel Stove Only exception areas in the TWWHA. The following factors should be taken into consideration:

- Compliance with the TWWHA Management Zoning and Recreational Standards Framework.
- Presence of designated campfire rings in campgrounds.
- The availability of firewood.
- Regular patrolling by rangers.
- Fire risk - flammability of the surrounding vegetation, soil type and the fire history of the area.

12 Key Desired Outcome:
Risk of bushfire ignition from visitors is reduced and illegal campfire occurrence is reduced or eliminated.

Management Action:

12.1 Apply the Fuel Stove Only policy to Little Deadmans Cove and Surprise Bay campsites on the South Coast Track.

13 Key Desired Outcome:
Visitors are educated and encouraged to adopt safe practices, and they are provided with sufficient and appropriate information about potential hazards to enable them to make responsible decisions.

Management Action:

13.1 Maintain the Leave No Trace and Minimal Impact Bushwalking campaigns as well as the employment of seasonal rangers to encourage compliance with the campfire management strategy.

13.2 Update signage across the TWWHA so that it is clear to visitors whether campfires are allowed or not.
Winch training (photo: Stu Gibson)
5. Preparedness

5.1 Pre-positioning
Pre-positioning of fire crews and aircraft is a tactic that is utilised when forecast weather conditions elevate the bushfire risk. Examples include when the Forest Fire Danger Index is forecast to exceed certain pre-defined trigger points, or when dry lightning is expected to cross the state. Pre-positioning crews and aircraft means that a rapid response to new ignitions can be dispatched, increasing the chance of containing bushfires. The Parks and Wildlife Service should develop sites that provide an optimal coverage of the TWWHA and are suitable for prepositioning aircraft and fire crews. Sites suitable for pre-positioning require basic shelter and facilities, requiring investment at some locations.

Management Action:
14.2 Remain up to date with fire detection technology and adopt as required.

5.2 Fire detection
The detection of new ignitions in remote areas can be a challenge. Parks and Wildlife Service staff are trained in the procedure for reporting bushfires, meaning that staff based in the field will quickly and accurately relay information to the PWS Fire Duty Officer. In addition, the PWS Fire Duty Officer is also alerted to any new ignitions on reserved land reported by the public through 000, or through fire towers managed by the forest industry and will charter spotter flights over remote areas when circumstances necessitate. In order to compliment these observations, PWS also employs a variety of lightning and hot spot detection technologies and will continue to investigate and invest in these technologies as they develop.

5.3 Resourcing
The Parks and Wildlife Service employ a permanent and seasonal contingent of remote area firefighters in order to suppress fires on PWS tenure. Furthermore, many PWS regional staff are also trained firefighters and are used for initial local response, as well as to enhance fire crew numbers during prolonged bushfire events. In addition, the Parks and Wildlife Service also resource Incident Management Teams (IMT). Maintaining appropriate levels of staffing to resource fire management activities requires substantial ongoing financial commitment and succession planning.

5.4 Training
Due to the world heritage value of the TWWHA, all people involved in its management require an understanding of the values for which it has been reserved. An understanding of reserve values is a vital component of fire protection strategies as an ability to prioritise a response is a required skill for both on-ground staff and IMT staff. An understanding of these values will be important in implementing the most appropriate fire management strategies.

Management Action:
14.1 Develop locations suitable for pre-positioning fire crew and aircraft in order to provide the best possible level of preparedness to high risk bushfire conditions.

15 Key Desired Outcome:
All personnel involved in fire management on reserved land are adequately trained to recognise and protect where possible world heritage values from fire.
Management Action:

15.1 All staff whose primary role involves fire management must undertake training in values identification. Permanent staff whose primary role involves fire management must undertake training in vegetation community identification and cultural awareness.

15.2 Personnel involved in fire management activities on reserved land are adequately briefed on natural and cultural reserve values.

5.5 Reserve Values Fire Protection Plans

A rapid response is critical to preventing large bushfires, however, when an initial attack fails to contain the fire and it continues to grow, suppression efforts need to turn to the protection of assets.

During the 2018/19 bushfire season a large number of fires burned throughout the TWWHA, threatening many of the highest value, fire-sensitive landscapes. In response, a team dedicated to assessing the risk, and developing strategies to protect the values within these landscapes, was established. The plans that were developed over the 2018/19 bushfire season became known as Reserve Values Fire Protection Plans (RVFPP).

Reserve Values Fire Protection Plans can assist firefighters to rapidly implement effective fire suppression strategies in order to provide the best chance of protecting assets when there is little chance of preventing the advance of a large bushfire.

The objective of RVFPPs is to prevent a bushfire impacting on a high-value area through long-term mitigation measures such as planned burning but also include a worse-case scenario set of options in the form of pre-identified point protection strategies in order to provide protection to the highest value assets within the landscape based on operational capabilities and available resources.

For Incident Management Teams, the protection tactics documented in the plans can be implemented often well in advance of a bushfire. The plans can also identify where longer-term fuel reduction may be useful to support suppression tactics and therefore overall chance of success. Consequently, the development and maintenance of RVFPPs is a high priority fire management strategy for the protection of natural and cultural values of high significance.

At a minimum, Reserve Values Fire Protection Plans should contain the following:

- Identification of values.
- Prioritisation of values.
- Details of tactics to protect values.
- Equipment required to implement tactics.
- Details of access to the values.
- Identification of appropriate helicopter landing sites in order to implement tactics.
- Biosecurity concerns that exist in the area.

Reserve Values Fire Protection Plans will initially be developed for all landscapes with a catastrophic consequence rating (Table 2). These are:

- Mount Anne massif.
- Walls of Jerusalem.
- Mount Field.
- Cradle Mountain and Cradle Valley.
- Mount Bobs and the Boomerang.
- Frenchmans Cap.

A number of RVFPPs that focus on point protection of a specific value have been developed during previous bushfire seasons, beginning in 2018/19. These are available to emergency management staff on the COP and are called ‘PWS Protection Plans’.
5.6 Equipment caching

Specialist firefighting equipment will be cached at strategic locations to significantly cut down on response times.

Equipment caching, however, does require a maintenance schedule to ensure working equipment when required. Equipment will be located in caches during the fire season and returned to regular stores at Lutana, Prospect and Ulverstone for inspection and maintenance during the off-season.

In addition to equipment caches, field centres should continue to be stocked with firefighting equipment, but similar to equipment caches, this equipment needs to be regularly inspected and maintained by experienced staff.
5.6.1 Specialist equipment

Remote boxes
Remote boxes consist of basic remote area firefighting equipment, including a heli-sling and accessories, first aid kit, splash mat, torches, rope, various fuels and oils, various pumps, suction hose, rakehoes, pulaskis, beaters, drip torch, triangular bladders, 500 litre collar dam, hose and fittings, tent and an overnight remote pack. Equipment is stored in an aluminium box with welded anchor points and engineered for helicopter slinging operations. Remote boxes would form part of an equipment cache.

Sprinklers
Recently PWS have been experimenting with specialist equipment for the sole purpose of asset protection rather than fire containment. Sprinkler lines were used successfully in some circumstances during the 2018/19 fire season.

Sisilation
Although untested, sisilation has been used to wrap historic huts in order to protect the huts from ember attack. This protective measure should be further trialed in future in the appropriate circumstances.

Bootwash stations
Bootwash stations used to clean and treat boots have become common at staging areas in order to limit the spread of diseases such as Phytophthora root rot fungus and chytrid fungus, both of which are present in the TWWHA.

5.7 Fire trails

The Tasmanian Wilderness World Heritage Area is a wilderness area with few roads although existing tracks have been created in the area for historical reasons, usually related to hydro-electricity generation or forestry. A network of existing tracks will be maintained in order to serve the role of fire trails within the TWWHA and to minimise impact on the TWWHA. These tracks are in various states of repair and many have been deliberately closed and rehabilitated. A large track network was incorporated into the TWWHA as part of the 2013 TWWHA extension. A dedicated project (2013 Tasmanian Wilderness World Heritage Area Extension Road Safety Project) identified which of these roads to close from a safety perspective but did not consider the road network from a fire management perspective.

To be of strategic value, fire trails should be located in one or more of the following situations:

- Adjacent to the assets requiring protection.
- Providing access to a strategic water source/s.
- Break up large tracts of contiguous flammable vegetation.
- Facilitate access and egress from reserves.
- Provide boundaries for planned burning blocks.

18 Key Desired Outcome:

Specialist remote area firefighting equipment is cached in strategic locations to facilitate rapid deployment across the TWWHA.

Management Action:

18.1 Develop strategic locations for gear caches in order to provide rapid deployment to the TWWHA.

18.2 Document all strategic fire trails on the Asset Management System and COP.
A helicopter waterbombing the Celtic Hill bushfire, 2019 (Photo: Stu Gibson).
6. Response

6.1 Bushfires

Fire management activities in the TWWHA aim to reduce the impact of unplanned bushfires, however, it will never be possible to eliminate all bushfires.

The ignition profile of the TWWHA has changed since circa 2000, with a shift from predominately human-caused fires to almost exclusively lightning-caused fires. These lightning ignitions often develop rapidly into very large landscape fires, with extinguishment quickly ceasing to be an option. During a landscape scale fire it will be necessary to protect the Outstanding Universal Value (OUV) of the TWWHA by focussing on values protection rather than fire containment. Recently, Reserve Values Fire Protection Plans have been developed to assist in focussing protection efforts on TWWHA OUVs. All ignitions within the TWWHA need to be assessed and resources allocated as appropriate.

There will be times (e.g. following multiple lightning ignitions) when it will not be possible to resource all fires and a triage approach will be required. It is important to note that the prioritisation of bushfires will often occur within a statewide context when fires are burning on other land tenures, with this process overseen by the Tasmania Fire Service and in accordance with the Inter-agency Bushfire Management Protocol between TFS, STT and PWS. When this occurs the OUVs of the TWWHA are often relegated and life and property protection gain higher priority.

In all bushfire situations within the TWWHA, PWS will give priority to the protection of the Outstanding Universal Value of the TWWHA over non-critical built assets.

Any fire response will be in the context of a crew safety risk assessment and sometimes it will not be possible for ground crews to reach the location of the fire due to weather conditions.

It is always ideal for the Incident Management Team managing the fire to be located as close as possible to the on-ground operations.

6.1.1 Rapid attack

Reviews of recent fire seasons have highlighted the need for a rapid response capability following an ignition in order to maximise the chances of containing bushfires before they develop to a size at which extinguishment is no longer possible, or they begin to threaten natural and cultural assets, property and life.

The development of winch capability within PWS in 2021 has been instrumental to advancing rapid attack capacity across the TWWHA.

19 Key Desired Outcome:
All bushfires are responded to when small and move to protection of values when the capacity to extinguish the fire is exceeded.

20 Key Desired Outcome:
When multiple ignitions occur on PWS managed land, response is appropriately prioritised.

Management Action:
20.1 Develop a system for the prioritisation of multiple new ignitions on PWS managed land and incorporate into future editions of the PWS Bushfire Season Fire Action Plan.

6.1.2 Fire suppression

The sensitive and predominately wet environment of the TWWHA means that traditional fire suppression techniques used in the drier eastern half of the state (and across the rest of mainland Australia) may be inappropriate.

It will be necessary to consider the long-term impacts of fire suppression activities on the TWWHA environment, for example, the use of machinery may cause more damage within the TWWHA than the fire itself.

Table 6 lists the common fire suppression strategies and their applicability to the TWWHA.
Table 6. Fire suppression strategies and associated environmental risks to Tasmanian Wilderness World Heritage Area values.

<table>
<thead>
<tr>
<th>SUPPRESSION STRATEGIES</th>
<th>EFFECTIVENESS</th>
<th>LEVEL OF USE</th>
<th>ENVIRONMENTAL RISKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct attack</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterbombing</td>
<td>Moderate – can contain a fire if less than 1 ha, however unlikely to completely suppress a fire without the assistance of ground crews.</td>
<td>Used regularly during initial attack.</td>
<td>Spread of invasive species, weeds and disease through the transfer of water from contaminated sources.</td>
</tr>
<tr>
<td>Direct attack</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helicopter inserted crews</td>
<td>High – if fire is less than 1 ha and accessible by helicopter landing, otherwise low.</td>
<td>Used regularly by landing in open areas or hover entry-exit in low lying vegetation or rocky outcrops.</td>
<td>Spread of weeds, pests and diseases on boots and tools.</td>
</tr>
<tr>
<td>Class A foam</td>
<td>Moderate – increases the suppression capability of water by decreasing the evaporation rate and increasing the ability for the water to adhere to and penetrate fuels.</td>
<td>Used regularly as additive to water. Use is guided by the Bushfire Chemical Decision Support Tool.</td>
<td>Not well researched in Australia. Known toxicity to freshwater fauna.</td>
</tr>
<tr>
<td>Retardant</td>
<td>Low – needs to be used under appropriate fire behaviour conditions and only suitable for some vegetation types. The appropriate coverage levels for Tasmanian vegetation types is unknown.</td>
<td>Limited use due to unknown environmental impact. Use guided by Bushfire Chemical Decision Support Tool.</td>
<td>Fertiliser effect, especially in low-nutrient environments. This can lead to structural change in the vegetation by promoting tea-tree species over sedges and rushes. Creates a very slippery ground surface, creating a dangerous environment for ground crews.</td>
</tr>
<tr>
<td>Backburning</td>
<td>High – provided environmental conditions are appropriate.</td>
<td>Occasionally used in the TWWHA.</td>
<td>Increases the size of the fire and has the potential for increased smouldering in organic soils and of trapping escaping fauna.</td>
</tr>
<tr>
<td>Dozer lines</td>
<td>High – fast containment of fires in accessible terrain. Low effectiveness in rocky or boggy country.</td>
<td>Limited use in the TWWHA because of rugged terrain, boggy soils, lack of road access and potential impact on values.</td>
<td>Damage to cultural, biological and geoconservation values. Increases potential for soil erosion. Spread of weeds, pests and diseases. Rehabilitation can be extremely slow and scars may be visible for many years.</td>
</tr>
<tr>
<td>Fire Control Method</td>
<td>Efficacy</td>
<td>Description</td>
<td>Outcome</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>Hose lays</td>
<td>High</td>
<td>High – often the only tactic for smouldering edges, but long lead-time to establish.</td>
<td>Used regularly throughout the TWWHA but restricted to small areas with a reliable water source.</td>
</tr>
<tr>
<td>Sprinklers</td>
<td>Moderate</td>
<td>Moderate – long lead time to establish and requires adequate water supply.</td>
<td>Limited use but with potential to increase as systems develop.</td>
</tr>
<tr>
<td>Soaker hoses</td>
<td>Moderate</td>
<td>Moderate – requires adequate water supply. A useful tactic for smouldering edges.</td>
<td>Limited use but with potential to increase as systems develop.</td>
</tr>
<tr>
<td>Handline</td>
<td>High</td>
<td>High – in drier vegetation types. Low if smouldering fire in organic soils.</td>
<td>Infrequently used because smouldering fires are common.</td>
</tr>
<tr>
<td>Limited action</td>
<td>Moderate</td>
<td>Used regularly for fires presenting no risk.</td>
<td>Fire size may escalate and impact significant natural and cultural values.</td>
</tr>
</tbody>
</table>
More detailed information on bushfire response tactics, as well as approval processes and guidelines for many activities, including the creation of helispots and dozer lines, can be found in *Fire Operations in Tasmania’s Parks and Reserves*. This document is currently updated annually in preparation for each fire season.

### 21 Key Desired Outcome:

The protection of Outstanding Universal Values are given priority protection over non-critical built assets in all bushfire situations within the TWWHA.

**Management Action:**

21.1 Update relevant PWS Fire Management Section policies to reflect the priority given to Outstanding Universal Values over non-critical infrastructure within the TWWHA.

### 22 Key Desired Outcome:

Bushfire suppression activities are appropriate for the environment in which they occur and do not result in more damage than the bushfire itself.

**Management Action:**

22.1 Continue annual update of *Fire Operations in Tasmania’s Parks and Reserves* so that the latest fire suppression strategies and approvals processes are incorporated.

22.2 Develop a monitoring program in order to assess fire suppression strategies on TWWHA values.

### 6.1.3 Limited action

Depending on environmental conditions it may not always be necessary to respond to a new ignition. Table 7 outlines the triggers for both concerted and limited action. However, there may be occasions when the lack of resources, and/or unfavourable weather conditions, prevent initial attack and/or sustained action. Resources may be lacking due to the commitment to other fire suppression priorities, for example, following a dry lightning event that causes many fires simultaneously.

### 6.1.4 Emergency Response Plans

Emergency Response Plans detail the required actions for a specific area when an emergency occurs. Emergency Response Plans have been developed for some high visitation areas. A standardised Emergency Response Plan template will be developed and all existing Emergency Response Plans will need to be reviewed. In addition, node specific Emergency Response Plans should be developed (Table 8).
### Table 7. Bushfire action decision support matrix.

<table>
<thead>
<tr>
<th>ZONE</th>
<th>SEASON/FFDI</th>
<th>INITIAL ATTACK</th>
<th>SUSTAINED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset</td>
<td>All</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Asset protection</td>
<td>All</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ecological Management Zone</td>
<td>All</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Strategic Fire Management Zone</td>
<td>Fire season: FFDI&gt;12</td>
<td>Yes</td>
<td>Fire will be assessed on whether it will stay within confines of the zone or if it occurs in a proposed burn block. If confirmed, the fire may be monitored or if in question indirect attack tactics may be utilised to contain fire within the zone.</td>
</tr>
<tr>
<td></td>
<td>Outside fire season: FFDI&gt;12</td>
<td>Assess</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All seasons: FFDI&lt;12</td>
<td>Assess</td>
<td></td>
</tr>
</tbody>
</table>

### Table 8. Locations for which Emergency Response Plans are required, and the current status of each location.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>STATUS</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Field National Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government Huts</td>
<td>Current</td>
<td>2014</td>
</tr>
<tr>
<td>Cradle Mountain/Cradle Valley</td>
<td>Current</td>
<td>2017/2018</td>
</tr>
<tr>
<td>Frenchmans Cap Track</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Vera Hut</td>
<td>Current</td>
<td></td>
</tr>
<tr>
<td>Tahune Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Walls of Jerusalem</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Overland Track</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scott Kilvert Hut</td>
<td>Current</td>
<td>2017/2018</td>
</tr>
<tr>
<td>Waterfall Valley Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Windermere Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>New Pelion Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Kia Ora Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Bert Nicholls Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Pine Valley Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Narcissuss Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Echo Point Hut</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Melaleuca</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Lake St Clair</td>
<td>Current</td>
<td>2017/2018</td>
</tr>
<tr>
<td>Scotts Peak Road and Strathgordon</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>South Coast Track</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Hartz Mountains</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Cockle Creek</td>
<td>Required</td>
<td></td>
</tr>
</tbody>
</table>
23  Key Desired Outcome:
All visitors to the TWWHA are safe from bushfire and planned burns.

Management Action:
23.1 Develop an Emergency Response Plan template in order to ensure consistency.
23.2 Develop and update existing Emergency Response Plans for areas identified in Table 8.
23.3 Make all Emergency Response Plans available on the COP, for quick identification of sites with emergency plans.

6.1.5 Staging camps
During campaign fires it will be necessary to feed and accommodate a large number of firefighters and fire support staff. As bushfires often occur during the peak summer holiday season when accommodation providers are fully booked, this can be a challenge.

Strategically placed locations should have infrastructure installed that can assist in bushfire response logistics. This can include things such as tent platforms, telecommunications, power, sewerage and water supply.

24  Key Desired Outcome:
Campaign fire logistics are supported through staging camps.

Management Action:
24.1 Investigate sites for the development of staging camps in order to assist in campaign bushfire management logistics.

6.2 Firefighting chemicals
Firefighting chemicals include both fire suppressants (foams, gels and gel-like products) and fire retardants (long-term retardant). They are commonly used across the world to assist with fire suppression and can be applied from the ground or air.

The environmental impacts of many of these products are not well understood, especially in the southern hemisphere.

Business rules for the application of firefighting chemicals across Tasmania have been developed into a decision support tool based on what is known, largely from the northern hemisphere. This layer is available on the COP under the Emergency Management category and named ‘Fire suppressant restriction.’

The aim is to use these products with the least environmental impact but maximum fire suppression effect, understanding that in many cases the impact of fire suppression chemical use may be lower than the impact of unsuppressed fire on TWWHA values. The business rules for application will need to be updated as better information becomes available.

Firefighting chemicals may become a valuable tool in the future in order to protect increasingly at risk fire-sensitive communities and species. The use of firefighting chemicals may also be a useful tool to assist in the protection of human life and property as needed, and to provide a safer operating environment for remote area firefighters.

The use and application of firefighting chemicals needs to be reviewed to ensure that their use is effective and not causing damage to TWWHA values.

More detailed information on the approval process for the use of firefighting chemicals can be found in Fire Operations in Tasmania’s Parks and Reserves.
6.3 Biosecurity

The Department of Primary Industries, Parks, Water and Environment has produced a biosecurity strategy for the TWWHA. Biosecurity refers to the protection of values from the impacts caused by weeds, pests and diseases. The strategy identifies a biosecurity risk as having two components:

- The likelihood of entry, establishment and spread of the invasive organism, and,
- The consequences to the environment, community or the economy if it were to occur.

Effective management of biosecurity risks in the TWWHA involves the following process:

1. Identifying threats
2. Assessing the associated risk/s
3. Identifying appropriate control or mitigation measures
4. Monitoring or evaluating the success of the control or mitigation measures
5. Adapting management actions in response to monitoring and evaluation

The strategy aims to use this process to achieve effective, coordinated management and mitigation of biosecurity risks in the TWWHA (Tasmanian Wilderness World Heritage Area Biosecurity Strategy 2021-2031).

A Biosecurity Aspect Risk Assessment was prepared to inform the development of the TWWHA Biosecurity Strategy and identifies specific fire operations (including firefighting and planned burning) that may pose a biosecurity risk.
6.3.1 Fire management activities

Fire management activities pose a major risk to the spread of weeds, pests and diseases into and around the TWWHA. This can occur through mud being transported on boots, tools, vehicles and machinery as well as within water as it is being transported to fight a fire.

It is common for fire management activities to occur in areas that are almost never visited, and as such, fire management personnel are the largest risk factor for the spread of weeds, pests and diseases into remote areas of the TWWHA.

The biosecurity risks arising from fire management activities are:

- Exacerbating biosecurity threats in areas known to contain weeds, pests or diseases.
- Becoming vectors for biosecurity threats into areas hitherto free of weeds, pests and diseases.

When managing a bushfire or conducting a planned burn, the following general principles should be applied:

- Water should not be moved between catchments.
- Water or retardant transported to a fire ground within the TWWHA in an aircraft filled from an airbase should be filled with mains water whenever possible.
- Tasmanian Wilderness World Heritage Area biosecurity overlays should be used to identify terrestrial areas and water bodies with known biosecurity threats, and areas free from biosecurity threats.
- All personnel entering a fire ground need to ensure their Personal Protective Equipment and tools are free of soil and seeds. This especially applies to velcro and boots. Tools and boots should be sprayed with a veterinary grade disinfectant. To facilitate this, bootwash and toolwash stations should be placed at all staging areas.

25 Key Desired Outcome:

Fire activities within the TWWHA do not contribute to the spread of any weeds, pests or diseases.

Management Action:

25.1 Implement the Tasmanian Wilderness World Heritage Area Biosecurity Strategy and Biosecurity Aspect Risk Assessment to ensure the risks from fire management activities are addressed.

25.2 Include education and training about biosecurity risks to all fire staff and contractors working within the TWWHA.

25.3 Develop a COP layer showing the biosecurity status of waterbodies and terrestrial areas within the TWWHA.

25.4 Develop a process to avoid the movement of water between catchments for fire operations.

25.5 Incorporate a Biosecurity section within the Incident Action Plan template.

25.6 Once developed, ensure biosecurity overlays are adhered to when conducting fire management activities.

25.7 Make bootwash stations available at every staging area managing fires within the TWWHA as well as major heli-bases. Personnel entering the fire ground must pass through the bootwash station before entering the fire ground.
A sprinkler line established in order to protect assets at Lake Rhona during the Gell River bushfire, 2019. (Photo: Chris Emms)
7. Recovery

7.1 Rehabilitation

As a bushfire is being controlled and extinguished there is a need to develop a bushfire rehabilitation plan in order to prevent the recurrent and further degradation of the affected value. A rehabilitation plan should be initiated by the IMT and begin development whilst the fire response is ongoing.

Rehabilitation activities may include:

- Erosion control.
- Rehabilitation of machine-constructed tracks.
- Rebuilding or repairing infrastructure.
- Fencing - for protection against herbivores or to restrict human access.
- Threatened species recovery plans.
- Assisted regeneration or restoration of fire-affected values or ecosystems.

All bushfire rehabilitation activities must consider inadvertent impacts that may be caused to cultural values.

7.2 Impact assessment

After a bushfire incident, there may be a need to assess the severity of impact the fire has had on the environment. This is done through an impact assessment, in accordance with the Draft Reserve Values Protection Team Operations Manual.

7.2.1 Triggers for impact assessment

Not all bushfires require an impact assessment. For example, a bushfire may have been brought under control whilst still small, or burnt to the edge of a buttongrass plain and self-extinguished, causing no damage to fire-sensitive assets.

The following tools should be used to determine the need for an impact assessment.

Bushfire Impact Report

The Parks and Wildlife Service Bushfire Impact Report is an automatically generated table that intersects mapped fire boundaries with TASVEG communities, threatened species records taken from the Natural Values Atlas, and PWS infrastructure recorded on the Asset Management System. Aboriginal Heritage Tasmania receive a second Bushfire Impact Report that intersects fire boundaries with the Aboriginal Heritage Register.

These are desktop assessments and only as accurate as the base mapping and fire boundary mapping. It is quite common for fire boundary maps to not reflect the most current fire position, and this needs to be considered when interpreting the data.

Any fire-sensitive assets captured within the Bushfire Impact Report should trigger either:

- An impact assessment.
- Fire ground reconnaissance to determine the need for an impact assessment.

Fire ground reconnaissance

In the event the Bushfire Impact Report indicates an impact on a fire-sensitive asset, a fire ground reconnaissance trip should occur to determine the veracity of the report. If a reconnaissance trip suggests there has been substantial damage to fire-sensitive assets an impact assessment should be undertaken.

The post-burn environment provides an ideal opportunity to conduct Aboriginal heritage surveys, however, this needs to occur swiftly following the fire due to the speed at which vegetation recovers.

7.2.2 Fire severity mapping

Fire severity mapping, typically based on satellite imagery, can be used to target areas for impact assessment, as it provides a landscape scale overview of variation in fire impact on vegetation. This is particularly useful when fires are large, or there are numerous fires, such that it is necessary to prioritise areas for on-ground assessment. Severity mapping includes identification of unburnt patches within
the fire ground, which allows remote assessment of whether values within the fire ground have actually been burnt.

The Department of Primary Industries, Parks, Water and Environment is currently developing a fire severity mapping tool that is tailored to Tasmania’s distinctive landscapes and vegetation.

A limitation of current remote sensing-based severity mapping techniques is that they can perform poorly in delineating understorey burnt and unburnt vegetation when tree canopies are dense. Similarly, detection of the subtle variation in severity in treeless vegetation is difficult.

### 7.3.1 Supplementary feeding

Another issue that often arises in the post-fire environment is the supplementary feeding of wildlife. The Tasmania Parks and Wildlife Service does not support the supplementary feeding of wildlife when there is no evidence of need.

#### 27 Key Desired Outcome:

Wildlife distress is minimised in the post-fire environment.

#### Management Action:

27.1 Based on the latest evidence, DPIPWE finalise a position statement on the supplementary feeding of wildlife following bushfire in the TWWHA.

27.2 IMTs incorporate a wildlife response section as part of the Operations and/or Planning unit when required. This will require identifying appropriate DPIPWE staff for these roles.

### 26 Key Desired Outcome:

Rehabilitation activities are undertaken and appropriate for the environment.

#### Management Action:

26.1 Conduct Aboriginal heritage surveys shortly after planned burns or bushfires that are likely to have exposed Aboriginal heritage sites.

26.2 Continue development and completion of the fire severity mapping tool.

### 7.3 Managing wildlife

Evidence shows that wildlife often escape the direct impacts of fire by fleeing or seeking shelter in burrows, rock crevices or insulated tree hollows, however, sometimes, especially when bushfires are large, wildlife have been observed to be injured or killed by the bushfire.

Currently, PWS do not have a formalised approach to incorporating wildlife response and care into the IMT structure. In order to address this, PWS should work with wildlife staff within DPIPWE in order to develop policies and procedures around wildlife care during bushfires. Wildlife staff should be trained in AIIMs in order to be called upon during bushfires when required.
8. Community

8.1 Fire safety

8.1.1 Visitor safety
The Tasmanian Wilderness World Heritage Area is a remote environment managed primarily for the protection, conservation and presentation of its natural and cultural values. People using the TWWHA outside of Visitor Services Zones are doing so in order to experience a wilderness environment and in doing so are accepting personal responsibility for their well-being and recognising the inherent risk involved in wilderness environments. Those risks include bushfire.

The Parks and Wildlife Service will work with the Tasmania Fire Service to find solutions that are in line with the management objectives of the TWWHA and at the same time provide for visitor safety.

Actions
The following actions will be used for the protection of visitors to mountain huts in remote areas of the TWWHA.

- Provide bushfire safety advice on the PWS website and at Visitor Centres.
- Relocate, or direct visitors to self-relocate, from an area at risk from a bushfire.
- Close tracks, campgrounds and parks and reserves when at risk from a bushfire.
- Communicate current bushfire advice through the media, PWS website and social media platforms.

Building safety
All new developments within parks and reserves must comply with the National Construction Code (NCC). The National Construction Code includes provisions for bushfire safety. Therefore, all new builds, including mountain hut replacements, require a Bushfire Attack Level (BAL) rating and must meet the performance requirements for the NCC.

The requirements of the NCC can be in conflict with World Heritage Area objectives of conservation, protection and preservation of natural and cultural values and management objectives of Tasmanian parks and reserves, specified in the National Parks and Reserves Management Act 2002.

Many of the mountain huts of the TWWHA have evolved from trappers huts, to emergency shelter for bushwalkers, to becoming a pivotal piece of infrastructure for modern day recreational users of the TWWHA. The huts along the Overland Track and Frenchmans Cap Track are two clear examples of the changing use of mountain huts over time. In addition, there are a number of established and potential commercial developments within the TWWHA.

This changing use has meant that as huts age they are gradually being replaced, however, replacement huts need to meet the criteria of the NCC. This can be particularly problematic for mountain huts as the category under which they are assessed within the NCC is not designed for remote area buildings within national parks and in order to meet the fire safety requirements of the NCC, vegetation will often require clearing.

Bushwalking is an inherently risky activity and fire is a natural and recurring phenomenon within these environments. Furthermore, the bushfire prone environment is the very environment that people come to see. This needs to be recognised in all new hut developments, including commercial developments, as clearing of vegetation in order to meet the NCC performance requirements is not appropriate.

The Parks and Wildlife Service will work with the Tasmania Fire Service to find solutions that are in line with the management objectives of the TWWHA and at the same time provide for visitor safety.
• As soon as a bushfire risk arises and if possible, remove people from any area that may be potentially impacted by the fire, and close the track or reserve.

• External sprinkler systems to be incorporated into all future hut designs and external sprinkler systems to be retrofitted onto existing high visitation huts. The objective of external sprinkler systems is to protect the hut, allowing firefighting resources to concentrate on the protection of irreplaceable TWWHA OUVs. External sprinkler systems are not intended to provide any protection to human life. Visitors will have been relocated.

Operators of commercial developments within the TWWHA will be required to develop their own Emergency Response Plans for visitor safety to be approved by the Parks and Wildlife Service.

All new developments should be built to a Bushfire Attack Level (BAL) that minimises impact on vegetation. When vegetation clearing is required, the following fire protection measures should be considered for different vegetation communities around mountain huts.

**Rainforest**
Mandatory closures and relocations of visitors for hut sites when specified conditions are breached. This would likely be a combination of the Forest Fire Danger Index and fuel moisture conditions.

**Buttongrass and heath**
Pruning of vegetation for a specified radius around the hut site.

**Eucalypt forest**
Clearing of trees and understorey vegetation.

**Alpine and subalpine**
Removal of woody vegetation and encouragement of a marsupial lawn environment.

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### 28 Key Desired Outcome:

Hut developments within the TWWHA meet fire safety standards but remain in keeping with the management objectives of the TWWHA and do not lead to the clearing of large amounts of vegetation.

### Management Action:

28.1 All new major developments within the TWWHA should have inbuilt external sprinkler systems where practical and achieve a BAL rating that mitigates vegetation clearing.

28.2 Operators of commercial developments within the TWWHA will develop their own Emergency Response Plans for visitor safety to be approved by the Parks and Wildlife Service.

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### 8.2 Fire interpretation, education and communication

Fire interpretation, education and communication plays a valuable role in ensuring visitors to the TWWHA understand the importance of contemporary fire for managing the landscape, but also the role fire has played in shaping the cultural landscape of the TWWHA.

Increasing public understanding of the role of fire in land management will assist PWS in implementing planned burning programs. Many areas of the TWWHA requiring active fire management, especially in Visitor Services Zones, have been avoided as the impacts on visitors has been seen to be detrimental. This perception should be challenged, with visitors exposed to the realities of land management, and backed up with strong interpretation explaining the reasons for burning.
29  Key Desired Outcome:
A public acceptance and understanding of the role of fire in land management, including planned burning and the inevitability of bushfires.

Management Action:
29.1 The Parks and Wildlife Service develop a fire communications plan that incorporates fire into all business areas, especially Visitor Centres, Discovery Ranger programs, signage and brochures.

29.2 The communications plan should target messages to different audiences. Messages should include the deep history and contemporary role of fire as a land management tool, fire ecology, and the inherent risk of fire escape from planned burning.

29.3 Fire interpretation is incorporated and updated as required at each Visitor Centre.

29.4 The role of fire in land management is a part of the Discovery Ranger and Track Ranger programs.

8.4 Other Tasmanian Wilderness World Heritage Area land managers and neighbours

Fire management activities cannot be done in isolation as fire does not recognise property boundaries. For this reason, PWS fire management activities need to take into consideration fire risk factors from neighbouring properties that have the potential to spread fire into the TWWHA, and work constructively with property owners to reduce that risk. At the same time, PWS fire managers need to recognise fire risk factors within the TWWHA, which may cause a threat to neighbouring land owners.

The following land types directly border the TWWHA as well as occurring within its boundaries:

- Aboriginal land.
- Private freehold with conservation covenant.
- Private freehold.
- Permanent Timber Production Zone Land (managed by STT).
- Future Potential Production Forest (unallocated Crown Land, managed by PWS).
- Future Potential Production Forest (managed by Hydro Tasmania).
- Crown land.
- Crown land public reserve.
- Hydro Tasmania.

30  Key Desired Outcome:
Fire management regimes will be pursued to achieve land management objectives and minimise risk.

Management Action:
30.1 Ensure apiarists are aware that fire management regimes are aimed at achieving land management objectives as well as the objectives of the relevant Fire Management Zone.

8.3 Apiarists

The Tasmanian Wilderness World Heritage Area supports over 100 beekeeping leases and the value of the honey industry to the Tasmanian economy is in excess of $9 million. Fire management objectives for the TWWHA will sometimes be in line with the interests of the honey industry, and sometimes in conflict.

Fire Management Zones will inform the recommended burn intervals for certain areas and this information will be publicly available on LISTmap. Prospective apiary site lease holders should consult this information to ensure their interests are aligned with the fire management objectives of the area before applying for a lease. In certain Fire Management Zones site flexibility could be built into the apiary lease.
The 2013 TWWHA boundary extensions saw a large increase in the number of small property owners whose land now shares a boundary with the TWWHA. Many of these are located around the Miena, Deloraine and Mole Creek areas.

The Parks and Wildlife Service support private land owners conducting well-planned fuel-reduction burns on land adjacent to parks and reserves. Restrictions on conducting fuel reduction burns may be in place if a Conservation Covenant prevents burning activities, the proposed burning activities will destroy or kill a quantifiable number of threatened species, or a fire permit period has been declared by the TFS (Marsden-Smedley and Sherriff 2014). For each of these restrictions, actions can be taken to allow burning to continue. For Conservation Covenants, law requires permission to be obtained from the Private Land Conservation Program; for threatened species, a threatened species permit issued by the Threatened Species Section of DPIPWE is required; and for burning that occurs during the declared fire permit season, a fire permit issued by TFS is required.

In addition to small property owners, there are a number of larger properties that are managed for ecological or cultural management purposes and either occur within the TWWHA or share a boundary with the TWWHA.

### 8.4.1 Aboriginal Land Council of Tasmania

The Aboriginal Land Council of Tasmania (ALCT) is a statutory body under the Aboriginal Lands Act 1995 with the role to use and sustainably manage Aboriginal land and its natural resources for the benefit of all Aboriginal people. The council must involve a local Aboriginal group or person in the management of its land.

Three parcels of land within the TWWHA are vested in ALCT, in trust for Aboriginal people in perpetuity. These are:

- ballawinne.
- kuti kina.
- wargata mina.

These three areas are managed by the Tasmanian Aboriginal Centre.

The Aboriginal community is engaged in resuming cultural burning practices throughout Tasmania. Any fire management activities, including the preparation of response plans, in areas surrounding Aboriginal land should be done in consultation and collaboration with the Aboriginal community.

### 8.4.2 Tasmanian Land Conservancy

The Tasmanian Land Conservancy (TLC) is a not-for-profit organisation that raises funds from public donations and land sales to protect high conservation-value land by buying and managing private land in Tasmania. The land is then placed under a Conservation Covenant.

As at the time of publication, the Tasmanian Land Conservancy (TLC) own three properties within the TWWHA and three that share a boundary with the TWWHA. The three properties that are entirely or partly within the TWWHA are:

- Gordonvale Reserve.
- Liffey Reserve.
- Skullbone Plains Reserve.

The Tasmanian Land Conservancy properties that border the TWWHA are:

- Tall Trees Reserve.
- Five Rivers Reserve.
- Vale of Belvoir Reserve.

The Tasmanian Land Conservancy have an active approach to land management and have developed fire management plans for a number of their properties. The Tasmanian Land Conservancy properties with fire management plans relevant to the TWWHA are shown in Table 9.
Table 9. Tasmanian Land Conservancy properties within or adjacent to the Tasmanian Wilderness World Heritage Area with an active fire management plan, and the key fire management objectives of each reserve.

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RELATIONSHIP TO TWWHA</th>
<th>KEY FIRE MANAGEMENT OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skullbone Plains</td>
<td>Within and adjacent</td>
<td>Maintain or enhance the natural diversity of species and communities through appropriate fire regimes. Protect human life and property from fire. Improve understanding of fire-sensitive and fire-dependent vegetation vital attributes and ecological regime requirements. Protect fire-sensitive communities and species from inappropriate fire, including the nationally endangered Sphagnum peatland and state vulnerable Mount Mawson pine (<em>Pherosphaera hookeriana</em>) along the Nive River. Implement an adaptive management framework to incorporate new knowledge into the active fire management of the reserve.</td>
</tr>
<tr>
<td>Vale of Belvoir</td>
<td>Adjacent</td>
<td>Protect human life and property from wildfires. Maintain rare and/or threatened species and their habitats. Minimise the area burnt by wildfires. Maintain and enhance diversity of native species and vegetation communities.</td>
</tr>
</tbody>
</table>

8.4.3 Tasmanian Aboriginal Centre
The Tasmanian Aboriginal Centre (TAC) is an Aboriginal community organisation that owns land adjacent to the TWWHA. Fire management activities are regularly carried out on TAC land. The Tasmanian Aboriginal Centre own one property close to the TWWHA, trawtha makuminya.

8.4.4 Bush Heritage Australia
Bush Heritage Australia is an independent not-for-profit organisation that buys and manages land in order to protect irreplaceable landscapes and native species forever. They own one property that shares a border with the TWWHA and another two that occur within the TWWHA. These are:
- Drys Bluff Reserve (adjacent).
- Liffey River Reserve (within).
- Coalmine Creek Reserve (within).
These reserves occur predominantly within wet forest, so there is very little active fire management that occurs on these properties.

8.4.5 Sustainable Timber Tasmania
Sustainable Timber Tasmania are the land managers of Permanent Timber Production Zone (PTPZ) land. A small amount of PTPZ land occurs within the TWWHA and a large amount shares a boundary with the TWWHA. The Parks and Wildlife Service and STT work co-operatively regarding fire management activities and both are signatories to the Inter-agency Bushfire Management Protocol (along with TFS).

8.4.6 Hydro Tasmania
Hydro Tasmania both manages land within the TWWHA and also manages assets on PWS land within the TWWHA.
The land on which power generating assets within the TWWHA sit has been vested in Hydro Tasmania, and they are therefore the managing authority of this land. Hydro Tasmania does not have the capability to undertake fire management activities on land they manage, therefore they work with PWS to identify and facilitate asset protection burning.

8.4.7 TasNetworks

TasNetworks is a Tasmanian government owned corporation that is responsible for electricity transmission and distribution throughout Tasmania. Two major TasNetworks transmission lines run across the TWWHA and a number of substations occur within, or on the edge of, the TWWHA.

TasNetworks are expected to maintain vegetation underneath transmission lines in order to reduce fire risk. The Tasmanian Wilderness World Heritage Area Management Plan (2016) authorises TasNetworks to exercise the statutory powers under the Electricity Supply Industry Act 1995, subject to certain conditions.

8.4.8 Other freehold land

There are a number of private freehold land parcels within the TWWHA. Some of these are subject to Conservation Covenants. Some private landowners already undertake regular planned burning on their properties.

31 Key Desired Outcome:

Prevent the spread of bushfires from the TWWHA to adjacent land and vice-versa.

Management Action:

31.1 The Parks and Wildlife Service works in collaboration with Fire Management Area Committees and the Bushfire Risk Unit to actively consult and work with landowners in reducing the fuel hazard adjacent to the TWWHA boundary in a manner that protects and enhances the values of the TWWHA and neighbouring properties.

32 Key Desired Outcome:

Work together with TWWHA neighbours to align TWWHA fire management practices and reduce fire risk from and into the TWWHA.

Management Action:

32.1 Convene annual meetings to discuss TWWHA fire management issues with all TWWHA landholders and neighbours.
9. Bibliography


<table>
<thead>
<tr>
<th>TWHA MANAGEMENT PLAN OBJECTIVES</th>
<th>TWHA MANAGEMENT PLAN KDOS</th>
<th>TWHA FIRE MANAGEMENT PLAN KDOS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cultural Values</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To develop and implement a joint management arrangement that ensures the strategies and actions for identification, protection, conservation and presentation of the World Heritage and other values of the TWHA are developed in partnership with Tasmanian Aboriginal people.</td>
<td><strong>KDO 4.1</strong> Management of Aboriginal cultural values in the TWHA is undertaken through a joint management governance arrangement that is supported by a dedicated unit within DPIWPE.</td>
<td>Aboriginal people are conducting low-intensity cultural burning within the TWHA under conditions that pose negligible risk of impact to fire-sensitive values.</td>
</tr>
<tr>
<td>To understand the TWHA as an Aboriginal cultural landscape, reflecting its long occupation, as a foundation for the management of its cultural values.</td>
<td><strong>KDO 4.3</strong> All DPIWPE staff who have responsibility for and/or undertake regular management activities in the TWHA have an appropriate level of knowledge and understanding of the area’s Aboriginal cultural values.</td>
<td>Aboriginal people are provided opportunities to be involved in contemporary fire management activities, including planned burning, in order to better incorporate Aboriginal burning practices into PWS practices, and move towards joint management of the TWHA.</td>
</tr>
<tr>
<td>To identify, protect, conserve and restore cultural values in the TWHA.</td>
<td><strong>KDO 4.5</strong> Aboriginal and cultural values are adequately accounted for in fire planning in the TWHA.</td>
<td><strong>KDO 4.7</strong> A range of opportunities is provided for Aboriginal people to access the TWHA and its resources, to pursue cultural activities and to actively participate in management of the area.</td>
</tr>
<tr>
<td><strong>Natural Values</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To identify, protect conserve and restore natural biological and geological diversity and processes in the TWHA.</td>
<td><strong>KDO 5.2</strong> Research and monitoring programs in the TWHA provide an understanding of trends in the conservation status of priority natural values, identify risks to those values, support the development of management strategies, and allow for rigorous assessment of management effectiveness.</td>
<td>Natural values are maintained through appropriate fire regimes.</td>
</tr>
<tr>
<td>To protect and conserve the natural landscapes of the TWHA, particularly in areas of exceptional natural beauty, and aesthetic and cultural importance.</td>
<td><strong>KDO 5.3</strong> Enhanced knowledge of the ecological role of fire in the TWHA improves fire management practices.</td>
<td>Fire activities within the TWHA do not contribute to the spread of any weeds, pests or diseases.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>KDO 5.6</strong> Where practicable, mitigation strategies are developed and implemented that minimise the impact of climate change on priority TWHA values.</td>
<td>Research needs are identified, prioritised and implemented as resources allow.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reserve Values Fire Protection Plans provide the intended protection from bushfire to key sites and assets.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wildlife distress is minimised in the post-fire environment.</td>
</tr>
</tbody>
</table>
To provide a diversity of visitor experiences in a manner that is consistent with the conservation of natural and cultural values.

| KDO 6.12 | Visitors are educated and encouraged to adopt safe practices, and they are provided with sufficient and appropriate information about potential hazards to enable them to make responsible decisions. |
| KDO 6.13 | The delivery of interpretation and information for the TWWHA is integrated with presentation strategies and supports management objectives. |
| KDO 8.2 | Risk of bushfire ignition from visitors is reduced and illegal campfire occurrence is reduced or eliminated. |

There is no loss of fire-sensitive vegetation and other high conservation natural, cultural and historic values in the TWWHA.

Risk of bushfire ignition from visitors is reduced and illegal campfire occurrence is reduced or eliminated.

Visitors are educated and encouraged to adopt safe practices, and they are provided with sufficient and appropriate information about potential hazards to enable them to make responsible decisions.

Rehabilitation activities are undertaken and appropriate for the environment.

Hut developments within the TWWHA meet fire safety standards but remain in keeping with the management objectives of the TWWHA and do not lead to the clearing of large amounts of vegetation.

Monitoring and Evaluation

To support the delivery of an informed, effective and transparent adaptive management regime for the TWWHA.

| KDO 5.4 | As climate change research matures, fire mitigation programs, including planned burning, that are implemented for the protection of fire-dependent and fire-sensitive values, are adapted in accordance with the findings of that research. |
| KDO 5.7 | Monitoring of natural values supports both the development of management strategies and actions that prevent or mitigate the potential impact of usage in the TWWHA, and the evaluation of management effectiveness. |
| KDO 8.4 | Knowledge of climate change informs and improves changing fire risk and associated fire management practices. |

Continuous improvement in fire management through linking management and research within an adaptive management framework.

Knowledge of climate change informs and improves changing fire risk and associated fire management practices.

A public acceptance and understanding of the role of fire in land management, including planned burning and the inevitability of bushfires.

Management

Note that 'Management' is not a specific objective within the TWWHA Management Plan, however many of the KDOs relate directly to management.

| KDO 8.1 | Integrated fire management planning is undertaken in the TWWHA for public safety; asset protection; Aboriginal cultural practices and values; and management of natural values and processes. |
| KDO 8.3 | The risk of bushfires to visitor safety is actively managed according to a visitor management strategy. |

Fire planning tools are maintained and continue to be developed in order to assist with planned burning and bushfire response.

A holistic TWWHA planned burning program is implemented that incorporates asset protection, strategic fire management, ecological and cultural burning and is planned across the geographic area of the TWWHA in order to provide the best possible protection from bushfire.

Landscape burning becomes a part of the TWWHA planned burn program.
Campfires are allowed for warmth and enjoyment in designated areas where the environmental and bushfire risks are low and are regularly patrolled by rangers.

The Parks and Wildlife Service is in the best position possible to respond to new bushfire ignitions.

All personnel involved in fire management on reserved land are adequately trained to recognise and protect where possible world heritage values from fire.

Specialist remote area firefighting equipment is cached in strategic locations to facilitate rapid deployment across the TWWHA.

Existing tracks are maintained in order to provide the best strategic fire trail coverage of the TWWHA.

All bushfires are responded to when small and move to protection of values when the capacity to extinguish the fire is exceeded.

When multiple ignitions occur on PWS managed land, response is appropriately prioritised.

The protection of Outstanding Universal Values are given priority protection over non-critical built assets in all bushfire situations within the TWWHA.

Bushfire suppression activities are appropriate for the environment in which they occur and do not result in more damage than the bushfire itself.

All visitors to the TWWHA are safe from bushfire and planned burns.

Campaign fire logistics are supported through staging camps.

Fire management regimes will be pursued to achieve land management objectives and minimise risk.

Prevent the spread of bushfires from the TWWHA to adjacent land and vice-versa.

Work together with TWWHA neighbours to align TWWHA fire management practices and reduce the fire risk from and into the TWWHA.
### Appendix 2

**Key risks and strategies**

<table>
<thead>
<tr>
<th>KEY CONCERNS AND RISKS</th>
<th>RESPONSE STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planned burning</strong></td>
<td></td>
</tr>
<tr>
<td>Loss of fire dependent ecosystems or species due to ecologically inappropriate fire regimes.</td>
<td>Planned burn frequency and intensity are managed to ensure vegetation communities are within tolerable fire intervals. Identify ecological burning programs to maintain fire-dependent communities. Planned burning prescriptions aim to protect reserve values and avoid negative impacts.</td>
</tr>
<tr>
<td>Risk of escape – fire escape.</td>
<td>Use of the Bushfire Risk Assessment Tool (BRAT) when completing an Operational burn plan (Section 3 Planning tools). Adhere to, and regularly update, prescriptions in Planned Burning in Tasmania: Operational Guidelines and Review of Current Knowledge. On-going training, mentoring and building of staff competency and capacity. Foster a culture of continuous improvement and mentoring. Includes conducting planned burn procedural audits and reviews (Section 4.1.3 Post-burn evaluation).</td>
</tr>
<tr>
<td>Risk of escape – leading to excessive caution in planning for planned burns limits the windows of opportunity and may also compromise the achievement of burn objectives.</td>
<td>Utilise the BRAT when completing an Operational burn plan (Section 3 Planning tools). Post-burn evaluation to understand the factors that led to the escape and adaptive management (Section 4.1.3 Post-burn evaluation). Community education around the fact that fire is a natural process influenced by weather and can therefore be difficult to predict. This may lead to escapes from time to time (Section 8.2 Fire interpretation, education and communication). Regular review of weather prescriptions, burns and burn plans (Section 4.1.3 Post-burn evaluation). On-going training, mentoring and building of staff capacity. Foster a culture of continuous improvement and mentoring. Includes conducting procedural audits and reviews (Section 4.1.3 Post-burn evaluation).</td>
</tr>
<tr>
<td>Public perception that blackened landscape is a sign of damage. Consequently community and stakeholder support for a planned burning program is eroded.</td>
<td>Awareness, education and interpretation (Section 8.2 Fire interpretation, education and communication).</td>
</tr>
<tr>
<td>Smoke impacting park visitors and neighboring communities.</td>
<td>Use smoke management system in line with best practice. Planning to take into account wind direction and likelihood of inversions. Awareness, education and interpretation (Section 8.2 Fire interpretation, education and communication).</td>
</tr>
</tbody>
</table>
### Key Concerns and Risks

<table>
<thead>
<tr>
<th>Key Concerns and Risks</th>
<th>Response Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regenerates and spreads weeds, pests and diseases.</td>
<td>Biosecurity to be taken into account when planning burns (Section 6.3 Biosecurity).</td>
</tr>
<tr>
<td></td>
<td>Biosecurity zoning to identify potential for fire to spread/promote weeds, pests and diseases.</td>
</tr>
<tr>
<td></td>
<td>Staff to undertake biosecurity awareness training to ensure biosecurity risks associated with fire management and management response are understood.</td>
</tr>
<tr>
<td>Uncertainty on the impact of fire on a threatened species within a fire dependent ecosystem leads to a decision to exclude fire. This response can lead to high fuel loads and the loss of the fire dependent ecosystems through succession.</td>
<td>Adopt a principle that fire dependent communities are adapted to firing and exclusion of fire could result in a loss of biodiversity.</td>
</tr>
<tr>
<td></td>
<td>Adhere to, and regularly review and update, burning prescriptions for threatened species and communities.</td>
</tr>
<tr>
<td>Planned burning program focuses only on risk mitigation to life and property resulting in a lack of resources for planned burning to achieve other objectives e.g. cultural, ecological. Focus of planned burning in one geographic location only.</td>
<td>Develop a mixed program of planned burn types and ensure a geographic spread to achieve ecological, cultural, strategic fuel reduction and asset protection objectives across the TWWHA (Section 4.1 Planned burning).</td>
</tr>
<tr>
<td></td>
<td>Develop criteria to prioritise planned burns that take into account PWS management objectives (Section 4 Priority burn scoring).</td>
</tr>
<tr>
<td>Planned burning program does not achieve desired results. Results of planned burns not assessed or evaluated so it is not known if planned burning is achieving desired results.</td>
<td>Develop a planned burn evaluation process (Section 4.1.3 Post-burn evaluation).</td>
</tr>
</tbody>
</table>

#### Bushfire Suppression

<table>
<thead>
<tr>
<th>Issue</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition detection and response too slow.</td>
<td>Pre-preparedness and rapid attack crew (includes winch capable crew) (Section 6.1 Bushfires).</td>
</tr>
<tr>
<td></td>
<td>Continue to invest in and adopt lightning detection technology.</td>
</tr>
<tr>
<td>Machinery use – negative impacts from use of machinery and often ineffective within some environments in the TWWHA.</td>
<td>Controls and approvals (Section 6.1.2 Fire suppression).</td>
</tr>
<tr>
<td>Biosecurity – weeds, pests and diseases are transported in soil or water during bushfire suppression operations.</td>
<td>Identify biosecurity zones to distinguish areas affected by weeds, pests and diseases, and pristine areas where strict biosecurity protocols are required (Section 6.3 Biosecurity).</td>
</tr>
<tr>
<td></td>
<td>Adopt biosecurity protocols including:</td>
</tr>
<tr>
<td></td>
<td>• transporting water the shortest practicable distance possible and avoid transfer across major watersheds.</td>
</tr>
<tr>
<td></td>
<td>• movement of personnel and equipment from one infected area to another.</td>
</tr>
<tr>
<td></td>
<td>Identification of the catchment level that water should not be transported between.</td>
</tr>
<tr>
<td></td>
<td>Incorporate a Biosecurity section within the Incident Action Plan template used within Incident Management Teams.</td>
</tr>
<tr>
<td>Backburning – potential for:</td>
<td>Implementing well-informed backburns when conditions are appropriate. Controls and approvals (Section 6.1.2 Fire suppression).</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• loss of control and increase in burnt area</td>
<td></td>
</tr>
<tr>
<td>• loss of organic soils.</td>
<td></td>
</tr>
<tr>
<td>Cutting of helicopter landing sites.</td>
<td>Controls and approvals (Section 6.1.2 Fire suppression). Where possible, identify sites free of habitat trees.</td>
</tr>
<tr>
<td>Firefighting chemicals</td>
<td>Use Bushfire Chemical Decision Support Tool (Section 6.2 Firefighting chemicals). Controls and approvals.</td>
</tr>
</tbody>
</table>

### Climate change

- Increased fuel dryness due to a reduction and changed seasonality of rainfall:
  - Increases chances of bushfires
  - Reduces the opportunity for planned burning.

- Increased ignitions from lightning strikes due to fuel dryness and increased dry lightning events.

**Adaptive management** (Section 2.3 Fire research in the Tasmanian Wilderness World Heritage Area). Draft Tasmanian Wilderness World Heritage Area Natural Values Climate Change Adaptation Strategy 2021-2031.

### Recreational activities

- Campfires – escape.

**Maintain Fuel Stove Only areas** (Section 4.5 Campfires). **Awareness, education and interpretation** (Section 8.2 Fire interpretation, education and communication). **Implement seasonal campfire restrictions.**

### Building and construction

- Hot works.

**Adhere to restrictions on hot works in daily Fire Action Plan.**

The need to maintain Hazard Management Areas impacts on reserve values and recreational experience.

**Building construction to only occur in vegetation types that can be appropriately modified.** **Adopt vegetation management options within** (Section 8.1.1 Visitor safety).

Buildings and infrastructure increase obligations on PWS and others to protect assets in fire prone areas of the TWWHA.

**Obligations on commercial operators to assess and manage risk.** **External sprinkler systems incorporated into the design of any new building within the TWWHA (Section 8.1.1 Visitor safety).**

### Bushfires

- Visitor risk.

**Emergency Response Plans for high risk sites** (Section 6.1.4 Emergency Response Plans).

- Fire sensitive ecosystems.

**Development and implementation of Reserve Values Fire Protection plans** (Section 5.5 Reserve Values Fire Protection Plans).
### Key documents used by Parks and Wildlife Service fire management staff

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>REFERENCE</th>
</tr>
</thead>
</table>
| Bushfire response                    | *Bushfire Season Fire Action Plan*  
                                        | *Fire Operations in Tasmania’s Parks and Reserves*  
                                        | *Tasmanian Reserve Management Code of Practice (2003)* |
| Appropriate fire regimes             | *Fire Regimes for Nature Conservation in the Tasmanian Wilderness World Heritage Area (2015)*  
                                        | *Pyrke and Marsden-Smedley (2006)*  
                                        | *EcoTAS threatened species reports (2018)* |
| Research needs gap analysis          | *Fire Regimes for Nature Conservation in the Tasmanian Wilderness World Heritage Area (2015)*                                         |
| Biosecurity                          | *Tasmanian Wilderness World Heritage Area Biosecurity Strategy 2021-2031 (2020)*  
                                        | *Keeping it clean (2010)*                                                                 |
| Climate change                       | *Draft Tasmanian Wilderness World Heritage Area Natural Values Climate Change Adaptation Strategy 2021-2031 (2020)*                   |
## Appendix 4

### Plan relationship to Press Report (2016)

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>PLAN SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation 1 – Comprehensive fire management planning</td>
<td>Section 1.2 Tasmanian Wilderness World Heritage Area Fire Management Plan objectives</td>
</tr>
<tr>
<td>Clear, well defined objectives for fire management.</td>
<td>Section 3.2 Fire Management Zoning</td>
</tr>
<tr>
<td>The circumstances in which priority will be given to protecting</td>
<td>Section 4.2 Landscape fire regions</td>
</tr>
<tr>
<td>the Outstanding Universal Value of the TWWHA over built assets</td>
<td>Section 6.1 Bushfires.</td>
</tr>
<tr>
<td>within its boundaries.</td>
<td></td>
</tr>
<tr>
<td>Identify strategic and priority areas for burning including</td>
<td></td>
</tr>
<tr>
<td>protective burning and cultural landscape burning.</td>
<td></td>
</tr>
<tr>
<td>Recommendation 3 – Objectives for planned burns</td>
<td>Section 4.1 Planned burning</td>
</tr>
<tr>
<td>Clear strategic and program level objectives for planned burning in</td>
<td>Section 4.1.3 Post-burn evaluation</td>
</tr>
<tr>
<td>the TWWHA.</td>
<td>Section 2.3 Fire research in the Tasmanian Wilderness World Heritage Area</td>
</tr>
<tr>
<td>The short, medium and long-term results of planned burns should be</td>
<td>Section 3 Planning tools</td>
</tr>
<tr>
<td>monitored and evaluated.</td>
<td>Section 4.4 Aboriginal burning</td>
</tr>
<tr>
<td>Burning programs should reflect the best available evidence.</td>
<td></td>
</tr>
<tr>
<td>Fire simulation tools should be used to guide the development of</td>
<td></td>
</tr>
<tr>
<td>planned burning programs.</td>
<td></td>
</tr>
<tr>
<td>The re-introduction of Indigenous burning practices should have</td>
<td></td>
</tr>
<tr>
<td>clear objectives.</td>
<td></td>
</tr>
<tr>
<td>Recommendation 5 – Research on fire and natural and cultural</td>
<td>Section 2.3 Fire research in the Tasmanian Wilderness World Heritage Area</td>
</tr>
<tr>
<td>heritage values</td>
<td></td>
</tr>
<tr>
<td>An ongoing program of scientific research and monitoring should</td>
<td></td>
</tr>
<tr>
<td>be maintained for the TWWHA.</td>
<td></td>
</tr>
<tr>
<td>Recommendation 8 – Capital investment</td>
<td>Various sections throughout Plan</td>
</tr>
<tr>
<td>Capital investment.</td>
<td></td>
</tr>
<tr>
<td>Recommendation 15 – Use of fire suppression chemicals</td>
<td>Section 6.2 Firefighting chemicals.</td>
</tr>
<tr>
<td>Use of fire suppression chemicals.</td>
<td></td>
</tr>
<tr>
<td>Campfires.</td>
<td>Section 4.5 Campfires.</td>
</tr>
<tr>
<td>Fire regions.</td>
<td>Section 4.2 Landscape fire regions.</td>
</tr>
<tr>
<td>Grassland burning.</td>
<td>Section 3.2 Fire management zoning</td>
</tr>
<tr>
<td>Managing fire-sensitive values in flammable landscapes.</td>
<td>Section 4.1 Planned burning</td>
</tr>
<tr>
<td>Lack of accommodation for firefighters and IMT staff.</td>
<td>Section 4.3 Landscape burning.</td>
</tr>
<tr>
<td>IMT personnel have an underpinning knowledge of the management of</td>
<td>Sections 3.2.4 Land Management Zone.</td>
</tr>
<tr>
<td>natural and cultural reserve values.</td>
<td>Section 6.1.5 Staging camps.</td>
</tr>
<tr>
<td>Winch capable crew.</td>
<td>Section 5.4 Training.</td>
</tr>
<tr>
<td></td>
<td>Section 6.1.1 Rapid attack.</td>
</tr>
</tbody>
</table>
## Appendix 5

### Inputs, data source and outputs for the different stages of the planned burn process.

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>DATA SOURCE</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Identification of bushfire hazards. | TASVEG  
Fire history  
BRAM. | TwWHHA Fire Management Plan  
Updated BRAM |
| Identification of values vulnerable to bushfire impact. | TwWHHA Fire Management Plan  
BRAM. | TwWHHA Fire Management Plan  
Updated BRAM |
| Identification of ecologically appropriate fire regimes. | In progress  
| Identification of treatable fuels. | TASVEG  
Fire history. | Treatable fuels GIS layer |
| **Program** | | |
| Identification of areas to be treated (burn units), season of treatment and ideal burn year. | Threatened species and communities prescriptions  
NCH advice through Reserve Activity Assessment  
In progress - Tolerable fire regimes for nature conservation report and table. | Three year TwWHHA burn schedule  
(Section 4.1 Planned burning and Appendix 6 – Example of fire planning process for the TwWHHA). |
| Identification of current fuel hazard. | TASVEG  
Fire history  
On-ground assessment if required. | Three year TwWHHA burn schedule |
| Identification of the appropriate spatial patterns of fuel level distribution in the landscape. | TwWHHA fire landscape units  
Treatable fuels. | Report on age distribution of treatable fuels within each landscape fire region  
(Section 4.2 Landscape fire regions). |
| **Operational** | | |
| Assessment of fuel characteristics of vegetation adjacent to the burn. | TASVEG  
Fire history  
On-ground assessment. | Operational burn plan |
| Assessment of fuel characteristics and variation across the burn. | TASVEG  
Fire history  
On-ground assessment. | Operational burn plan |
Threatened species and communities prescriptions  
NCH natural values advice. | Operational burn plan |
| Assessment of risk of burn. | Fuel characteristics  
Boundary information  
Fuel and weather conditions  
Potential burn consequences and benefits. | BRAT |
Example of fire planning process for the Tasmanian Wilderness World Heritage Area

All fire management activities within the TWWHA will occur through an adaptive management framework.

Broad objectives for planned burning in the TWWHA are to:

- Modify fuel characteristics (quantity and arrangements) in order to reduce potential fire behaviour and protect fire-sensitive natural, cultural and historical assets.
- Maintain biodiversity by applying appropriate fire regimes.
- Maintain the TWWHA as a cultural landscape through the application of cultural burning.

Specific objectives for planned burning within the TWWHA are to burn an average of at least five per cent of moorland per year on a rolling average and for less than 20 per cent of treatable vegetation to be outside its tolerable fire interval within each landscape region (Modified from DPIPWE 2015).

The following provides a detailed example of how the Plan recommends fire planning within the TWWHA should be undertaken.

Strategic level fire planning is undertaken on a rolling three year basis.

This means that a planned burn program is developed for a three year period (spring to autumn), but updated each year for the next three years, based on planned burning achievements in the previous season and bushfire activity.

Adaptive management stages -

PLAN

1. Burn blocks across the TWWHA are pre-identified (Management Action 6.8).
   a. Each year’s planned burn program should equate to roughly five per cent of moorland within each landscape fire region* (planned burning objective).
   b. Include other non-moorland treatable fuels where required in order to ensure that less than 20 per cent of the TWWHA is outside tolerable fire intervals (planned burning objective).
2. Devise a number of different planned burning scenarios that meet the criteria of point 1.
3. Run Firescape model for the different planned burning scenarios identified at point 2 (Management Action 6.14).
4. Select the most appropriate planned burn program as identified by the outputs of Firescape-SWTAS runs.
5. Complete RAA.

DO

6. Conduct burn operations

EVALUATE AND LEARN AND ADJUST

7. Conduct burn evaluation (Management Action 6.7 & 6.8) and work with NCH to implement the Fire Impacts of Biodiversity Values in the Tasmanian Wilderness World Heritage Area: Monitoring Strategy 2021-2025 (DPIPWE 2020a).
8. Adapt planning process as required.

* This target is indicative only. Some landscape fire regions contain very little moorland and it will be likely that the entirety of the moorland will be burnt within only one or two burns. Therefore, it will not be necessary to burn moorland within these landscape fire regions until an appropriate fire age is reached as determined by the Fire Management Zone these burn blocks fall into.
The adaptive management cycle

- **Plan**: Determine management objectives, define key desired outcomes, identify performance indicators, develop management strategies and actions.
- **Do**: Establish monitoring programs for selected performance indicators, implement strategies and actions to achieve objectives.
- **Evaluate & Learn**: Adjust management actions and arrangements to enhance effectiveness, evaluate management effectiveness, report findings and recommendations of evaluations, periodically review overall management program.

**Key Steps**
- Define key desired outcomes
- Identify performance indicators
- Develop management strategies and actions
- Establish monitoring programs for selected performance indicators
- Implement strategies and actions to achieve objectives
- Adjust management actions and arrangements to enhance effectiveness
- Evaluate management effectiveness
- Report findings and recommendations of evaluations
- Periodically review overall management program
Asset Protection Zones

Asset Protection Zones occur adjacent to the Asset Zone and may extend a number of kilometres away from the asset, with the area encompassed in the APZ based on prevailing wind direction, topography and fire history. Asset Protection Zone mapping includes areas of non-treatable vegetation, however, only the treatable vegetation will be subjected to fuel modification. Asset Protection Zones are not final boundaries for individual burning blocks but show where one, several or many burn blocks are to be determined.
## Appendix 8

### Treatable vegetation communities

<table>
<thead>
<tr>
<th>TASVEG CODE</th>
<th>TASVEG COMMUNITY</th>
<th>VEGETATION ASSOCIATION CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAC</td>
<td><em>Eucalyptus amygdalina</em> coastal forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DAD</td>
<td><em>Eucalyptus amygdalina</em> forest and woodland on dolerite</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DAM</td>
<td><em>Eucalyptus amygdalina</em> forest on mudstone</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DAS</td>
<td><em>Eucalyptus amygdalina</em> forest and woodland on sandstone</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DAZ</td>
<td><em>Eucalyptus amygdalina</em> inland forest and woodland on Cainozoic deposits</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DBA</td>
<td><em>Eucalyptus barberi</em> forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DDE</td>
<td><em>Eucalyptus delegatensis</em> dry forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DGL</td>
<td><em>Eucalyptus globulus</em> dry forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DMW</td>
<td>Midlands woodland complex</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DNF</td>
<td><em>Eucalyptus nitida</em> Furneaux forest</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DNI</td>
<td><em>Eucalyptus nitida</em> dry forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DOB</td>
<td><em>Eucalyptus nitida</em> dry forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DOV</td>
<td><em>Eucalyptus ovata</em> forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DOW</td>
<td><em>Eucalyptus ovata</em> heathy woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DPD</td>
<td><em>Eucalyptus pauciflora</em> forest and woodland on dolerite</td>
<td>Dp</td>
</tr>
<tr>
<td>DPO</td>
<td><em>Eucalyptus pauciflora</em> forest and woodland not on dolerite</td>
<td>Dp</td>
</tr>
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<td>DPU</td>
<td><em>Eucalyptus pulchella</em> forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DRI</td>
<td><em>Eucalyptus risdonii</em> forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DRO</td>
<td><em>Eucalyptus rodwayi</em> forest and woodland</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DSC</td>
<td><em>Eucalyptus amygdalina - Eucalyptus obliqua</em> damp sclerophyll forest</td>
<td>Dp</td>
</tr>
<tr>
<td>DSG</td>
<td><em>Eucalyptus sieberi</em> forest and woodland on granite</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DSO</td>
<td><em>Eucalyptus sieberi</em> forest and woodland not on granite</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DTD</td>
<td><em>Eucalyptus tenuiramis</em> forest and woodland on dolerite</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DTG</td>
<td><em>Eucalyptus tenuiramis</em> forest and woodland on granite</td>
<td>Df, Dd</td>
</tr>
<tr>
<td>DTO</td>
<td><em>Eucalyptus tenuiramis</em> forest and woodland on sediments</td>
<td>Df, Dd</td>
</tr>
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<td><em>Eucalyptus viminalis - Eucalyptus globulus</em> coastal forest and woodland</td>
<td>Df, Dd</td>
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<td><em>Eucalyptus viminalis</em> Furneaux forest and woodland</td>
<td>Df, Dd</td>
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<tr>
<td>DVG</td>
<td><em>Eucalyptus viminalis</em> grassy forest and woodland</td>
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<tr>
<td>FMG</td>
<td>Marram grassland</td>
<td>We</td>
</tr>
<tr>
<td>FPF</td>
<td><em>Pteridium esculentum</em> fernland</td>
<td>We</td>
</tr>
<tr>
<td>FRG</td>
<td>Regenerating cleared land</td>
<td>Pt</td>
</tr>
<tr>
<td>FWU</td>
<td>Weed infestation</td>
<td>We</td>
</tr>
<tr>
<td>GCL</td>
<td>Lowland grassland complex</td>
<td>G</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Code</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>GHC</td>
<td>Coastal grass and herbfield</td>
<td>G</td>
</tr>
<tr>
<td>GPL</td>
<td>Lowland <em>Poa labillardieri</em> grassland</td>
<td>G</td>
</tr>
<tr>
<td>GRP</td>
<td>Rockplate grassland</td>
<td>G</td>
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<tr>
<td>GSL</td>
<td>Lowland grassy sedgeland</td>
<td>G</td>
</tr>
<tr>
<td>GTL</td>
<td>Lowland <em>Themeda triandra</em> grassland</td>
<td>G</td>
</tr>
<tr>
<td>MBE</td>
<td>Eastern buttongrass moorland</td>
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<td>MBP</td>
<td>Pure buttongrass moorland</td>
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<tr>
<td>MBR</td>
<td>Sparse buttongrass moorland on slopes</td>
<td>As</td>
</tr>
<tr>
<td>MBS</td>
<td>Buttongrass moorland with emergent shrubs</td>
<td>Bs</td>
</tr>
<tr>
<td>MBU</td>
<td>Buttongrass moorland (undifferentiated)</td>
<td>Bs</td>
</tr>
<tr>
<td>MBW</td>
<td>Western buttongrass moorland</td>
<td>Bs</td>
</tr>
<tr>
<td>MRR</td>
<td>Restionaceae rushland</td>
<td>Bs</td>
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<td>MSW</td>
<td>Western lowland sedgeland</td>
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<tr>
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<td><em>Allocasuarina littoralis</em> forest</td>
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<td>NAV</td>
<td><em>Allocasuarina verticillata</em> forest</td>
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<tr>
<td>NBA</td>
<td><em>Bursaria - Acacia</em> woodland and scrub</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>NBS</td>
<td><em>Banksia serrata</em> woodland</td>
<td>Ws</td>
</tr>
<tr>
<td>SAL</td>
<td><em>Acacia longifolia</em> coastal scrub</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SCA</td>
<td>Coastal scrub on alkaline sands</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SCH</td>
<td>Coastal heathland</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SCL</td>
<td>Heathland on calcareous substrates</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SED</td>
<td>Eastern scrub on dolerite</td>
<td>Ds</td>
</tr>
<tr>
<td>SHW</td>
<td>Wet heathland</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SKA</td>
<td><em>Kunzea ambiguа</em> regrowth scrub</td>
<td>Ds</td>
</tr>
<tr>
<td>SLG</td>
<td><em>Leptospermum glaucescens</em> heathland and scrub</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SLS</td>
<td><em>Leptospermum scoparium</em> heathland and scrub</td>
<td>Ds</td>
</tr>
<tr>
<td>SMM</td>
<td><em>Melaleuca squameа</em> heathland</td>
<td>Ws</td>
</tr>
<tr>
<td>SSC</td>
<td>Coastal scrub</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SSK</td>
<td>Scrub complex on King Island</td>
<td>Ds, Hh</td>
</tr>
<tr>
<td>SSK</td>
<td>Scrub complex on King Island</td>
<td>Ds, Hh</td>
</tr>
</tbody>
</table>

**As** – Alpine and subalpine heathland without conifers or deciduous beech  
**Bs** – Buttongrass moorland  
**Dd** – Dry sclerophyll woodland  
**Df** – Dry sclerophyll forest  
**Dp** – Damp sclerophyll forest  
**Ds** – Dry scrub and coastal scrub  
**G** – Native grassland  
**Hh** – Heathland  
**Pt** – Private  
**We** – Flammable weeds and bracken  
**Ws** – Wet scrub
### Tasmanian Emergency Risk Assessment Guidelines Consequence Table

<table>
<thead>
<tr>
<th></th>
<th>INSIGNIFICANT</th>
<th>MINOR</th>
<th>MODERATE</th>
<th>MAJOR</th>
<th>CATASTROPHIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEOPLE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>Not Applicable</td>
<td>Deaths greater than 1 in 10,000,000 people for the population of interest • 0.05 persons</td>
<td>Deaths greater than 1 in 1,000,000 people for the population of interest • &gt;0.5 persons</td>
<td>Deaths greater than 1 in 100,000 people for the population of interest • &gt;5 persons</td>
<td>Deaths greater than 1 in 10,000 people for the population of interest • &gt;50 persons</td>
</tr>
<tr>
<td>Injuries/Illness</td>
<td>Less than 1 in 1,000,000 of the population seriously injured or any minor injuries</td>
<td>More than 1 in 10,000,000 of the population critically injured with long-term or permanent incapacity or 1 in 1,000,000 of the population seriously injured</td>
<td>More than 1 in 1,000,000 of the population critically injured with long-term or permanent incapacity or 1 in 100,000 of the population seriously injured</td>
<td>More than 1 in 100,000 of the population critically injured with long-term or permanent incapacity or 1 in 10,000 of the population seriously injured</td>
<td></td>
</tr>
<tr>
<td><strong>ECONOMY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss in economic activity and/or asset value</td>
<td>• Decline of economic activity and/or loss of asset value &lt;0.004% of gross area product • ~$100,000</td>
<td>• Decline of economic activity and/or loss of asset value • &gt;0.004% of gross area product • ~$1,000,000</td>
<td>• Decline of economic activity and/or loss of asset value • &gt;0.04% of gross area product • ~$10,000,000</td>
<td>• Decline of economic activity and/or loss of asset value • &gt;4% of gross area product • ~$100,000,000</td>
<td>• Decline of economic activity and/or loss of asset value • &gt;4% of gross area product • ~$1,000,000,000</td>
</tr>
<tr>
<td>Impact on important industry</td>
<td>Inconsequential business sector disruption</td>
<td>Significant industry or business sector is impacted by the emergency event, resulting in short-term (i.e. less than one year) profit reductions</td>
<td>Significant industry or business sector is significantly impacted by the emergency event, resulting in medium-term (i.e. more than one year) profit reductions</td>
<td>Significant structural adjustment required by a significant industry to respond to and recover from emergency event</td>
<td>Failure of a significant industry or sector</td>
</tr>
<tr>
<td><strong>ENVIRONMENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of species and/ or landscapes</td>
<td>Minor damage of local or regional level significant and recognised ecosystem or species</td>
<td>• Significant loss/ impairment of state-level significant and recognised ecosystem or species • Minor damage of regionally significant and recognised ecosystem or species</td>
<td>• Significant loss/ impairment of nationally-significant and recognised ecosystem or species • Severe damage of state-level significant and recognised ecosystem or species • Permanent destruction of regionally significant and recognised ecosystem or species</td>
<td>• Severe damage or loss of nationally-significant and recognised ecosystem or species • Permanent destruction of state-level significant and recognised ecosystem or species</td>
<td>Permanent destruction of nationally-significant and recognised ecosystem or species</td>
</tr>
<tr>
<td>ENVIRONMENT</td>
<td>Loss of environmental value</td>
<td>Inconsequential damage to environmental values of interest</td>
<td>Minor damage to environmental values of interest</td>
<td>Significant damage to environmental values of interest</td>
<td>Severe damage to environmental values of interest</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------</td>
<td>--------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Governance functions</td>
<td>Governing bodies’ and institutions’ delivery of core functions is unaffected or within normal parameters</td>
<td>Governing bodies and institutions encounter limited reduction in delivery of core functions</td>
<td>• Governing bodies and institutions encounter significant reduction in the delivery of core functions</td>
<td>• Governing bodies and institutions are required to divert some available resources to deliver core functions or seek external assistance to deliver some of their core functions</td>
<td>• Governing bodies and institutions are required to divert a significant amount of available resources to deliver core functions or seek external assistance to deliver the majority of their core functions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOCIAL SETTING</th>
<th>Community wellbeing</th>
<th>• Community social fabric is disrupted</th>
<th>• Community social fabric is damaged</th>
<th>• Community social fabric is broken</th>
<th>• Community social fabric is significantly broken</th>
<th>• Community social fabric is irreparably broken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Existing resources sufficient to return the community to normal function</td>
<td>• Some external resources required to return the community to normal function</td>
<td>• Significant external resources required to return the community to normal function</td>
<td>• Extraordinary external resources required to return the community to functioning effectively</td>
<td>• Community ceases to function effectively, breaks down</td>
<td>• Community disperses in its entirety</td>
</tr>
<tr>
<td></td>
<td>• No permanent dispersal</td>
<td>• No permanent dispersal</td>
<td>• No permanent dispersal</td>
<td>• Significant permanent dispersal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culturally important objects</td>
<td>Minor damage to objects of identified cultural significance</td>
<td>Damage to objects of identified cultural significance</td>
<td>Widespread damage to objects of identified cultural significance</td>
<td>Widespread permanent loss of objects of identified cultural significance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community services</td>
<td>Inconsequential / short-term reduction</td>
<td>Isolated/temporary reductions</td>
<td>Ongoing reductions</td>
<td>Reduced quality of life</td>
<td>Community unable to support itself</td>
<td></td>
</tr>
<tr>
<td>Culturally important activities</td>
<td>Minor delay of a major culturally important activity or event</td>
<td>Delay of a major culturally important activity or event</td>
<td>Some delay or reduced scope to a major culturally important activity or event</td>
<td>Temporary cancellation or significant delay to a major culturally important community activity or event</td>
<td>Permanent cancellation of a major culturally important community activity or event</td>
<td></td>
</tr>
</tbody>
</table>
CONTACT DETAILS

Parks and Wildlife Service
GPO Box 1751
Hobart, Tasmania, 7001

1300 TASPARKS (1300 827 727)

www.parks.tas.gov.au