

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.

Following the 2016 bushfires, which impacted approximately 1.27 per cent of the TWWHA, the Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project¹ recommended the preparation of a fire management plan covering the TWWHA.

The TWWHA Fire Management Plan will aim to provide a strategic direction for fire management that is underpinned by a contemporary adaptive management framework in order to protect human life, the Outstanding Universal Value of the TWWHA, and other fire-sensitive assets from fire.



There are a range of fire management issues that are interrelated and present a range of management options all with associated advantages and disadvantages. Issues papers have been prepared on the following topics in order to increase public awareness and promote discussion and feedback.

1. Tasmanian Wilderness World Heritage Area fire management objectives
2. Fuel-reduction burning
3. Planned burning: landscape fuel-reduction burns for asset and ecosystem protection
4. Planned burning: use of fuel-reduction burns for ecosystem maintenance
5. Cultural burning
6. Backburning
7. Use of aircraft
8. Fire suppressants and retardants
9. Use of machinery
10. Use of military personnel and volunteers
11. Organic (peat soil) fires
12. Fuel stove only areas

These issues papers can be found on the Have Your Say section of the Parks and Wildlife Service website.

Please note that there are many technical literature reports and papers available that document various research outcomes relating to fire in the TWWHA. These papers do not duplicate that work but rather present key issues to inform further discussion.



Fire management in the TWWHA

Contemporary fire management refers to both using prescribed fire and suppressing unplanned bushfires. Prescribed fires (also referred to as planned burns) are used for both asset protection – by reducing the fuel load of fire-adapted vegetation – as well as for ecological maintenance. Many of the natural ecosystems within the TWWHA are fire-dependent, meaning that they require fire at certain intervals in order to stay healthy and maintain their biodiversity. Without fire, they will transition to different vegetation communities and the current landscape as we know it now will change. For this reason, complete fire suppression within the TWWHA is not only impractical but also undesirable.

The absence of planned burning results in higher fuel loads in flammable vegetation, increasing the chance of unplanned ignitions and resultant bushfires.

A bushfire can only occur when there is an ignition source present. The management and education of people who use 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 around 2000.

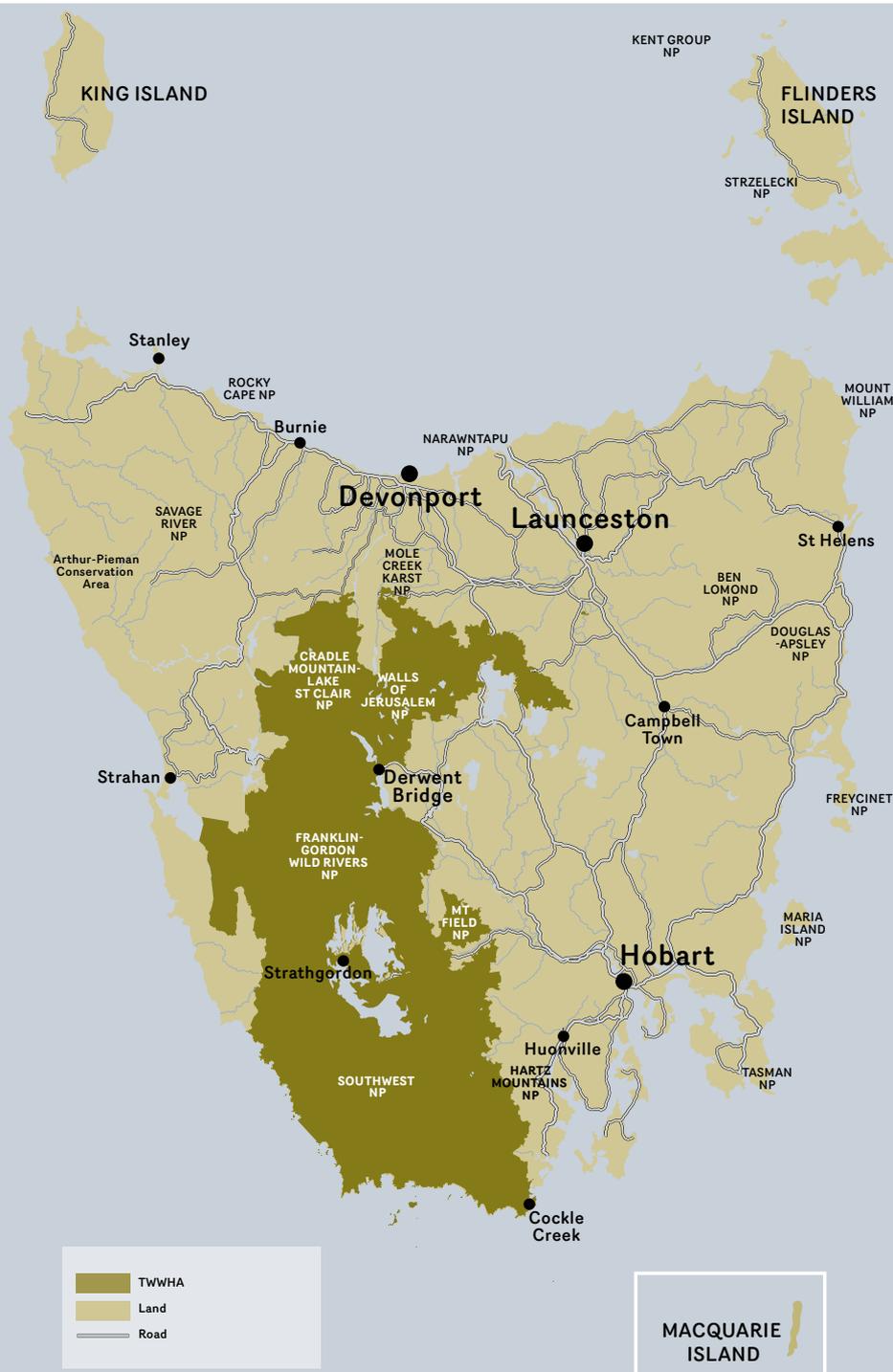
It is important to reduce the hazard from high fuel loads, because bushfires will burn at higher rates of spread and greater intensities when the fuel load is high. Thus, a lower fuel load makes a bushfire less destructive and more likely to be brought under control.

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 injury or damage to people, infrastructure and ecosystems. The conditions under which some bushfires occur mean that fire-sensitive vegetation that is usually too wet to burn (e.g. rainforest) may in fact burn. A high-intensity fire also results in uniform impact over a large area – a condition that is undesirable for ecosystem health. Management through the use of targeted planned burning eliminates these consequences and reduces the bushfire risk.



Objective

The objective of the Tasmanian Wilderness World Heritage Area Fire Management Plan will be to provide strategic direction underpinned by a contemporary adaptive management framework in order to protect human life, the Outstanding Universal Value of the TWWHA, and other fire-sensitive assets.



History of the area

The Tasmanian Wilderness World Heritage Area (TWWHA) covers 1.58 million hectares, which equates to roughly 20 per cent of the land area of Tasmania. It was first inscribed onto the World Heritage List in 1982, with major extensions occurring in 1989 and 2013. The TWWHA is recognised as being a place of Outstanding Universal Value (OUV), meeting seven out of a possible 10 criteria for listing. This includes all four natural criteria and three cultural heritage criteria.

The TWWHA plays an important role in the culture and identity of Tasmania. During the last ice age, the TWWHA was home to the southernmost humans on earth. Aboriginal Tasmanians have lived in, and used fire to manage and modify, the landscape of the TWWHA for at least 40,000 years: the evidence for this is present in many of the vegetation patterns of the landscape that we see today. The TWWHA remains a diverse and living Aboriginal cultural landscape.

Early European settlers often ventured into the TWWHA, with some making their home there. Trappers, piners, miners and grazers all used the area. Evidence of this occupation ranges from the rudimentary timber huts they built for shelter to the dead stags of burnt pencil pines that can still be seen in many places across the landscape – a sign of past attempts to clear the landscape with fire.

The TWWHA is a popular location for tourism and recreation, providing a range of experiences, from one-hour guided adventures, to multi-day, off-track bushwalking and many types of recreational activities in between. The TWWHA provides a challenging and remote environment and is also a drawcard for interstate and international tourism, with Cradle Mountain being amongst the top 10 attractions within Australia.

All these issues stir deep passions within the Tasmanian community. As such, decisions regarding management are often accompanied by a wide range of thoughts and opinions, which will vary, and sometimes conflict, depending on the objectives of the stakeholders. Decisions around fire management are contentious. Ensuring adequate engagement with the community is necessary in order to achieve a broad level of acceptance of the fire management plan.



Outstanding Universal Value

The TWWHA is recognised as being an area of Outstanding Universal Value. There are a plethora of values that contribute to the Outstanding Universal Value (OUV) of the TWWHA. Many of these values, such as particular plants or ecosystems, are fire-sensitive. Protecting these values from the adverse effects of fire is of paramount importance.

A full list of recognised values can be found here: <http://www.environment.gov.au/heritage/places/world/tasmanian-wilderness>

When the TWWHA was first listed in 1982, a Statement of Outstanding Universal Value was not required. Currently, a retrospective Statement of Outstanding Universal Value is being developed. This includes values that are both fire-sensitive (do not require fire at regular intervals) and fire-adapted (do require fire at regular intervals to maintain ecological and cultural integrity). This statement will be the key reference for the future effective protection and management of the property.

The following list contains high conservation significance values that are known, or likely to be, fire-sensitive:

- > Conifer communities
- > Deciduous beech communities
- > Alpine ecosystems
- > Fire refugia
- > Organic soils
- > Karst features
- > Shell middens
- > Hut depression sites

Some of the above values are more at risk from the fire response than the fire itself. For example, shell middens and hut depression sites may be not be severely impacted by a bushfire but are easily destroyed by earth-moving machinery or water bombardment.

The TWWHA also contains a number of fire-dependent values that contribute to its listing of Outstanding Universal Value.



Cultural landscape

The 2016 TWWHA Management Plan² recognises the TWWHA as a cultural landscape, and recommends assessment as an outstanding Aboriginal Cultural Landscape under the World Heritage Convention. Aboriginal fire management practices were one of the key drivers in shaping the landscape of the TWWHA that exists today. For example, the buttongrass plains that form large tracts of the TWWHA represent this past Aboriginal burning history, where fire was used in order to create favourable hunting grounds and maintain trade routes.

The 2016 TWWHA Management Plan places increased emphasis on the TWWHA as a cultural landscape and recommends the inclusion of Aboriginal people in management decisions and actions.

In addition, the National Bushfire Management Policy Statement³ addresses the importance of bushfire management in building employment opportunities for indigenous Australians:

“Build employment opportunities and the skill base of people working in land and bushfire management (including Indigenous communities) to ensure that Australian agencies continue to have access to graduates, technical and field personnel with appropriate specialised education and training”



Economic impacts of fire in the TWWHA

In addition to being a globally unique landscape of Outstanding Universal Value, the TWWHA provides substantial economic value to the local Tasmanian community. This includes: ecosystem services such as the provision of clean drinking water; recreation; tourism experiences; power generation; communications infrastructure; and bee-foraging habitat for the multi-million dollar honey industry. The tourism industry in Tasmania alone contributes over \$3 billion to Gross State Product, directly and indirectly employs around 42,000 people⁴ and relies heavily on the TWWHA and other Parks and Wildlife Service reserves for both direct nature-based tourism experiences and branding.

The hydro-electric industry also has a major presence in the TWWHA, with critical power infrastructure located on and adjacent to TWWHA land. Hydro Tasmania manages 13,500 ha of land within the TWWHA and has approximately 680 km of shared boundary with the TWWHA. In addition, Hydro Tasmania is reliant on healthy water catchments, which are required in order to replenish water-storage impoundments. The connection with mainland Australia via the Basslink interconnector means that the role of the TWWHA for electricity services extends beyond Tasmania.

Bushfires can negatively effect on all these services, adding a far greater economic impact to the state than simply the direct cost of fighting the fire. A bushfire may necessitate the closure of parks and reserves, whilst damage to infrastructure, such as walking tracks, can lead to reduced visitation of fire affected areas.

Climate change

FIRE RISK

The impacts of climate change on the TWWHA are uncertain, although modelling has projected an increasing fire-danger environment as the century progresses. This will manifest in increased soil dryness and number of adverse fire-danger days. These changes will not be uniform across the TWWHA, with the worst conditions projected to occur on the Central Plateau⁵.

Climate change projections will result in more frequent and larger fires. This will increase the risk to World Heritage values as more vegetation types and environments become dry enough to burn more frequently. Changes to the lightning regime are projected to occur, with modelling suggesting a slight decrease in the amount of dry lightning. However, any decrease in dry lightning will be offset by an increase in dryness, resulting in a likely rise in potential fires⁵. This will undoubtedly impact the OUV of the TWWHA and has the potential to cause incremental loss of some values, which require different climatic conditions to ensure their continual replacement and regeneration.

Climate change will have important implications for planned-burning programs. A recent report into the future viability of planned burning under climate change conditions forecasts less frequent periods suitable for planned burning, as required by current operational guidelines⁶. This reduction in opportunities for planned burning will be augmented by a substantial increase in fuel availability and a decrease in fuel moisture (allowing fires to burn more intensely). Periods of higher flammability will be brought forward earlier in the season

and extend later, resulting in conditions conducive to safe, low-intensity burning occurring less frequently in spring and autumn.

TRANSITION IN VEGETATION COMMUNITIES

Changes in fire regimes due to climate change are going to impact the way vegetation communities change over time. Under modelled scenarios two likely outcomes for vegetation communities are that a) communities considered unlikely to burn due to high moisture levels (e.g. rainforest) will become increasingly flammable; and b) the intervals between fires will become shorter.

The TWWHA consists of a mosaic of fire-sensitive vegetation communities sharing boundaries with highly flammable communities, buttongrass moorland being the most common. This patchwork mosaic exists in part through the presence of different fire regimes, with fire excluded from certain environments due to variations in soil and fuel moisture levels.

The theoretical framework for this process in western Tasmania is that moorland can transition to scrub to eucalypt forest to rainforest if the interval between fires is sufficient enough. Similarly, rainforest can become moorland if it suffers extensive, repeated fire damage⁷.

The fire-regime changes resulting from climate change will alter the transitions in vegetation communities, as the more an area is burnt, the more flammable it becomes. This is because more fire-tolerant and fire-adapted species take the place of the lower fire-tolerant and less flammable species.



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A patchwork mosaic of different vegetation communities. These patterns have been determined by the past fire regime.

Current situation

Although good progress has been made in reducing unintended human-caused ignitions through education and a fuel-stove only policy, there has been a large rise in lightning-caused ignitions over the last decade and a half. Lightning ignitions can be more difficult to control as they are more likely to occur in remote areas and may remain undetected for some time. In addition, a lightning storm may result in multiple ignitions occurring simultaneously across the landscape, placing enormous pressure on firefighting authorities. The inevitability of bushfire in Australia is recognised in the National Bushfire Management Policy Statement³:

“Like other natural hazards, bushfires cannot be prevented. Australia cannot be ‘fire-proofed’ any more than it can be made flood-proof or drought-proof. Bushfires are inevitable, and in some instances can be managed to assist in achieving land management objectives.”

In this context, it is important to acknowledge that there is no silver bullet for bushfire control. Fire response strategies in the TWWHA have evolved with climate change, but will need to be developed further as the frequency and scale of fires increase. Issues such as capability, lightning and fuel-moisture detection, the development of decision-support tools, on-ground firefighting tools, equipment, and the use of products such as fire-suppression chemicals will need to continue to be addressed. Strategies will need to evolve and adapt as climate change impacts their usefulness.

Although best efforts will always be made, the loss of fire-sensitive and irreplaceable assets is inevitable. An aim of the Fire Management Plan will be to minimise these losses. The effects of climate change will make this situation worse as bushfires become larger and more frequent and the opportunities for planned burning decrease.

REFERENCES

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PHOTOS

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