Southern Fire Management Area

Fire Protection Plan

2019

Document Control

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Document Endorsements

Agency	Name & Title	Signature	Date

Document Endorsement

Endorsed by Southern FMAC Chair Jye Hill

Accepted by State Fire Management Council

SFMC Chair – Ian Sauer
Date:

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Glossary

Asset	A term used to describe anything valued by the community that may be adversely impacted by bushfire. This may include residential houses, infrastructure, agriculture, industry, environmental and heritage sites.
Bushfire	Unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective.[1]
Bushfire hazard	The potential or expected behaviour of a bushfire burning under a particular set of conditions, i.e. the type, arrangement and quantity of fuel, the fuel moisture content, wind speed, topography, relative humidity, temperature and atmospheric stability.
Bushfire risk management	A systematic process to coordinate, direct and control activities relating to bushfire risk; with the aim of limiting the adverse effects of bushfire on the community.
Consequence	The outcome or impact of a bushfire event.
Human Settlement Area (HSA)	A spatial data set that defines an area where people live or work.
Likelihood	The chance of something occurring.
Risk	The effect of uncertainty on objectives.[2] (Note: Risk is often expressed in terms of a combination of the consequences of an event and the associated likelihood of occurrence.)
Risk acceptance	The informed decision to accept a risk, based on the knowledge gained during the risk assessment process.
Risk analysis	The application of consequence and likelihood to an event in order to determine the level of risk.
Risk assessment	The systematic process of identifying, analysing and evaluating risk.
Risk criteria	Standards (or statements) by which the results of risk assessments can be assessed. They relate quantitative risk estimates to qualitative value judgements about the significance of the risks. They are inexact and should be seen as guidelines rather than rules.[3]
Risk evaluation	The process of comparing the outcomes of risk analysis to the risk criteria in order to determine whether a risk is acceptable or tolerable.
Risk identification	The process of recognising, identifying and describing risks.
Risk treatment	A process to select and implement appropriate measures undertaken to modify risk.

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[1] Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne, Australia

[2] Standards Australia 2009, Risk management – Principles and guidelines, AS/NZS 31000:2009, Standards Australia, Sydney, Australia

[3] Emergency Management Australia 1998, Australian Emergency Manuals Series – Manual 3 Australian Management Glossary, Emergency Management Australia, Dickson, Australia

Acronyms

BPP	Bushfire Planning and Policy Unit
BRU	Bushfire Risk Unit
FIAT	Forest Industry Association Tasmania
FMAC	Fire Management Area Committee
FPP	Fire Protection Plan
SFMA	Southern Fire Management Area
PWS	Parks and Wildlife Service
REMC	Regional Emergency Management Council
SEMC	State Emergency Management Committee
SFMC	State Fire Management Council
STT	Sustainable Timber Tasmania
TFGA	Tasmania Farmers and Graziers Association
TFS	Tasmania Fire Service

Chapter 1 Introduction

1.1 Background

Under Section 20 of the *Fire service Act 1979,* fire management area committees are required to submit to SFMC, on an annual basis, a fire protection plan for its fire management area commencing on 1st January 2018.

It is a requirement of the fire protection plan that it is consistent with the State Fire Protection Plan and the State Vegetation Fire Management Policy.

1.2 Aim and Objectives

The **aim** of this FPP is to document a coordinated and efficient approach towards the identification and treatment of bushfire-related risk within the Southern Fire Management Area (SFMA).

The **objective** of this FPP is to effectively manage bushfire related risk within the SFMA in order to protect people, assets and other things valuable to the community. Specifically, the objectives of this plan are to:

- Guide and coordinate a tenure blind bushfire risk management program over a twelve (12) month period;
- Document the process used to identify, analyse and evaluate risk, determine priorities and develop a plan to systematically treat risk;
- Facilitate the effective use of the financial and physical resources available for bushfire risk management activities;
- Integrate bushfire risk management into the business processes of Local Government, land managers and other agencies;
- Ensure integration between stakeholders;
- Clearly and concisely communicate risk in a format that is meaningful to stakeholders and the community; and
- Monitor and review the implementation of the Plan, to ensure enhancements are made on an on-going basis.

Due to the condensed time frame available to produce this plan, there has been a focus on bushfire risk mitigation through fuel reduction burning. It is the SFMACs view that as the plan is reviewed and developed over time that other bushfire risk mitigation measures are more thoroughly reviewed and considered. Where fuel reduction burning can't be undertaken, community bushfire-ready education programs such as the TFS Bushfire-Ready Neighbourhoods program can focus activities to help community mitigate their risk.

1.3   Policy, Standards and Legislation

The following policy, standards and legislation were considered to be applicable to the development and implementation of the FPP.

- Tasmanian Emergency Management Plan
- State Fire Protection Plan
- State Vegetation Fire Management Policy
- State Strategic Fuel Management Plan

Standards
- AS/NZS ISO 31000:2009 - Risk Management – Principles and Guidelines
- AS 3959:2009 - Construction of Buildings in Bushfire Prone Areas

Legislation
- *Aboriginal Relics Act 1975 (soon to be replaced)*
- *Fire Service Act 1979*
- *Emergency Management Act 2006*
- *National Parks and Reserve Management Act 2002*
- *Nature Conservation Act 2002*
- *Crown Lands Act 1976*
- *Forestry Act 1920*
- *Threatened Species Protection Act 1995*
- *Environmental Management and Pollution Control Act 1994*
- *Local Government Act 1993*
- Forest Practices Code 2015
- Tasmanian Electricity Code
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Weed Management Act 1999*
- *Historic Cultural Heritage Act 1995*
- *Wellington Park Act 1993*

Chapter 2 Establishing the Context

2.1   Description of the Southern Fire Management Area

2.1.1 Location, Boundaries and Land Tenure

The plan area covers approximately 1,037,000 ha. It encompasses the local government areas of Derwent Valley, Kingbourough, and Huon Valley. The SFMA geographically includes the Southern and Western parts of the Wellington Range, lower Derwent Valley, Huon Valley, Tyenna Valley and areas bounded by the D'Entrecasteaux Channel including Bruny Island. It contains a large portion of the South West National Park including the settlements of Melaluca and Strathgordon. Altitude varies considerably throughout the SFMA, ranging from sea level at coastal areas, to 1425m above sea level (asl) at Mt Anne. The western section of the SFMA has many mountain peaks over 1000m asl and is considered to be some of the most remote and rugged land in Australia.

The vast majority of the area (73%) consists of public lands (including PWS and Crown Land Services), which are predominantly located in the wetter southern and western portion of the area. (Figure 2.2; Table 2.1). The majority of the private lands are located along a number of river valleys and adjacent to the D'Entrecasteaux Channel in the eastern portion of the area. Permanent Timber Production Zone occupies the majority of the remaining area.

Land Manager/Agency	% of Land Managed within the SFMA
Private Property	14
DPIPWE (including Parks and Wildlife Service and Crown land Services)	70
Sustainable Timber Tasmania	11
Hydro	3
Other	2

Table 2.1: Overview of land tenure in the SFMA.

Figure 2.1: Location of the SFMA.

Legend
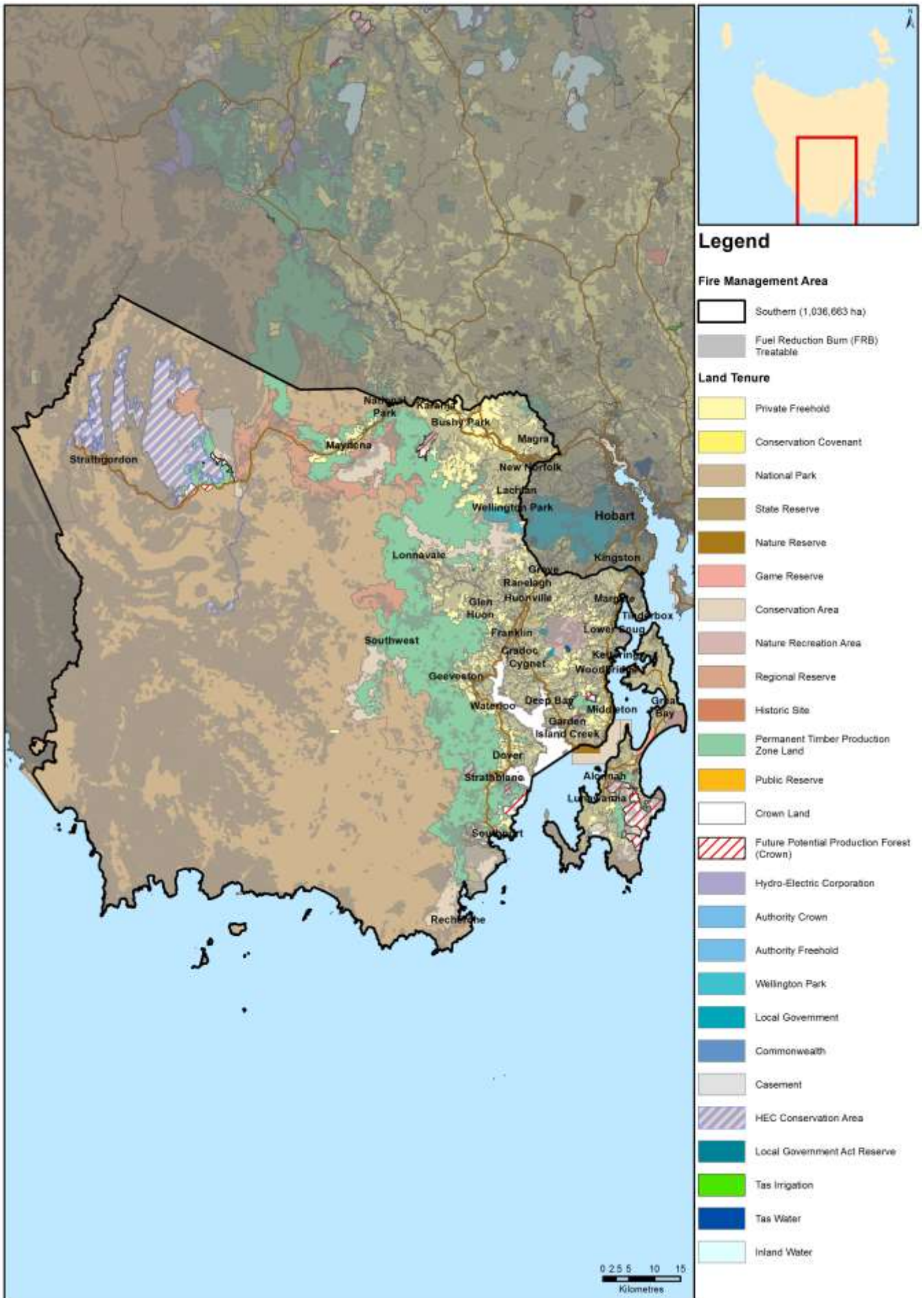
Fire Management Area

Southern (1,036,663 ha)

Figure 2.2: Land tenure across the SFMA.

2.1.2 Climate and Bushfire Season

The SFMA experiences extremes of climatic conditions. It contains some of the driest and wettest areas of Tasmania, with average rainfalls ranging from 549mm at New Norfolk to 3080mm at Strathgordon.

Temperatures also vary considerably across the plan area, with areas inland experiencing more extremes of temperatures than those located near the coast. This is clearly demonstrated with Bushy Park having a mean maximum temperature of 24 degrees in February and a mean minimum temperature of 1.5 degrees in July.

Because of this, the length of the fire season can vary considerably across the plan area. Drier parts within the SFMA can have fire seasons that run from October through to April, with areas of higher rainfall and wetter vegetation types limited to the period of December to March.

BoM weather stations with the SFMA:

-Maydena

-Bushy Park

-Upper Russell

-Scotts Peak

-Mueller Ridge

-Razorback

-Warra

-Dover

-Cape Bruny

-Dennes Point

-Geeveston

-Grove

-Hartz Mountains.
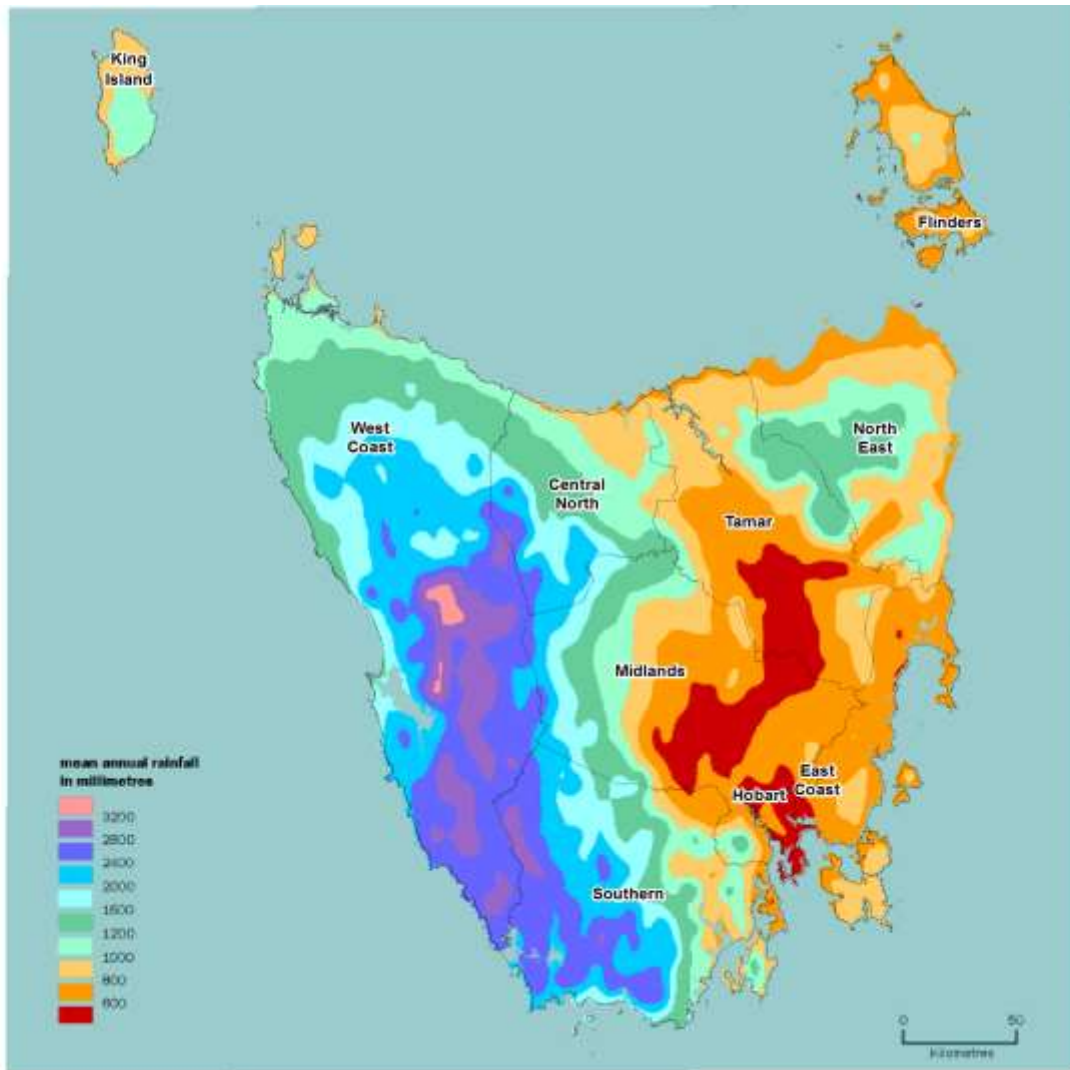
Source: Map provided by Ian Barnes-Keogan, Bureau of Meteorology, Hobart

Figure 2.3: Mean annual rainfall across Tasmanian Fire Management Areas

2.1.3 Vegetation

The SFMA consists of a wide range of vegetation types (Figure 2.4). The eastern and north-eastern parts of the SFMA are predominantly occupied by agricultural land and eucalypt forest and woodland. At many locations these eucalypt forests can grade from dry forests and woodlands to wet forests types over a relatively short distance. These forests have a high flammability, and many of the human settlement areas within the SFMA are located in close proximity to these forests.

The higher rainfall western part of the SFMA consists of wetter forest types that grade to rainforest in areas where there has been negligible fire history. Large areas of moorlands are present on sites of low soil quality or poor drainage, often in close proximity to rainforest types. Alpine vegetation types are present on the higher sections of mountain ranges and plateaus. Many of these vegetation types, particularly rainforest and alpine vegetation are highly sensitive to loss and damage through fire.

The vegetation in the SFMA can be categorised into 11 broad groups that represent broad vegetation or landscape types, as shown in Figure 2.4. A description of these vegetation groups is provided in Appendix 7.
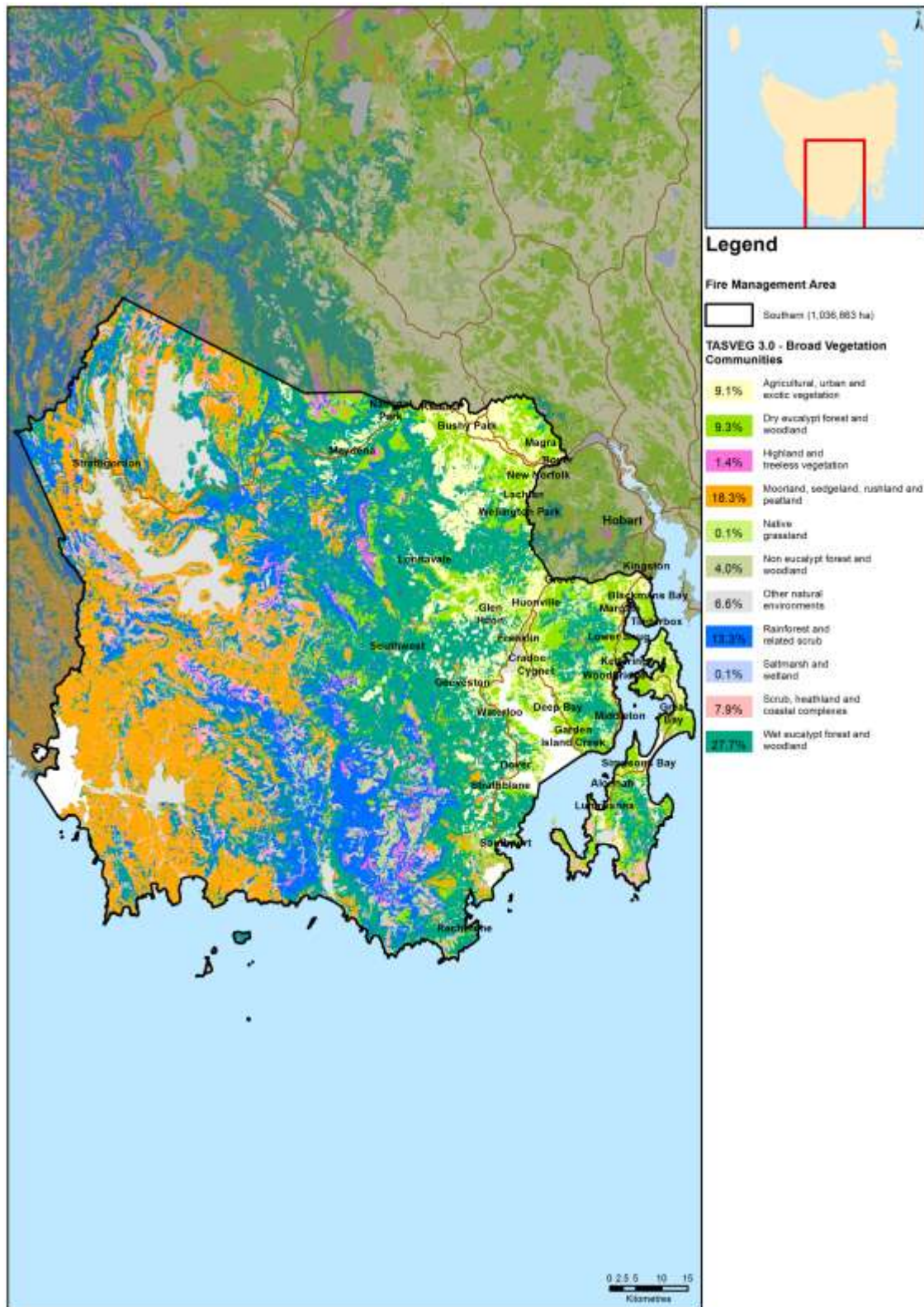
Figure 2.4: Vegetation types across the SFMA (based on grouped TASVEG vegetation mapping units).

2.1.4 Population and Demographics

A large proportion of the SFMA is virtually uninhabited, forming part of the South West National Park. The majority of the population is found in the Huon Valley and D'Entrecasteaux Channel areas. Other populations are located around New Norfolk in the lower Derwent Valley and include the settlements of Hayes, Moogara, Bushy Park, and Maydena.

Major towns within the SFMA:

- Kingston

- Blackmans Bay

- Margate

- Kettering

- Cygnet

- Huonville

- Geeveston

- New Norfolk.

Areas of significant growth within the SFMA include residential developments around Kingston Blackmans Bay and Margate, and life style (small acreage) developments in the Huon Valley around Ranelagh and Grove areas.

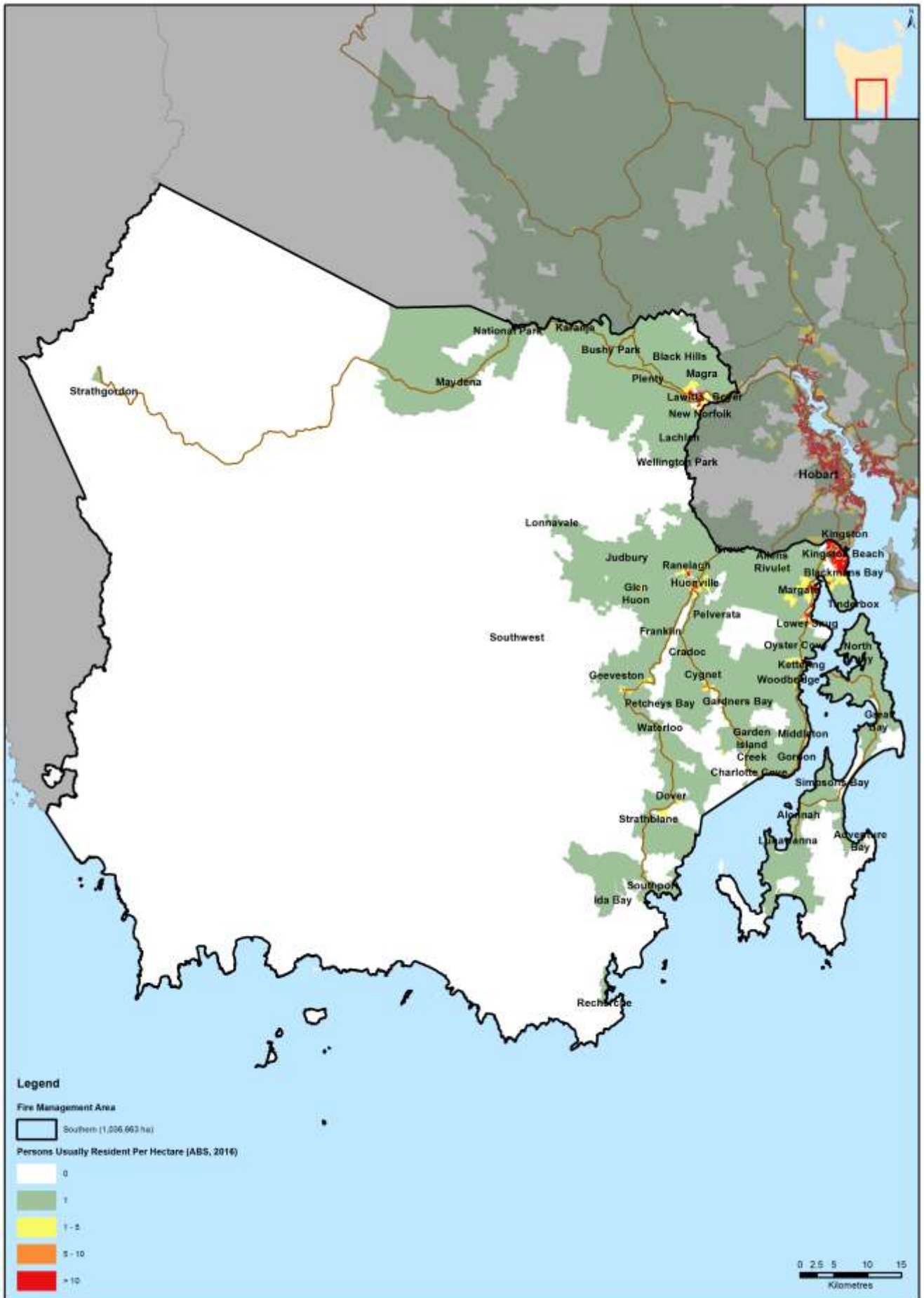**Figure 2.5: Population density in the SFMA No. of residents per ha (Australian Bureau of Statistics 2011).**

2.1.5 Bushfire Frequency and Causes of Ignition

Fire Frequency

Fire frequency is defined as the total number of fires that occurred in the same area over a given time. Fire frequency records for the SFMA have been obtained from records provided by the Tasmania Fire Service, Parks and Wildlife Service and Sustainable Timber Tasmania but the records are incomplete. Figure 2.6 below indicates the areas affected by fire and the number of times that area has been affected.

Fire Ignition Cause

The causes of fire, either through ignition by lightning or caused by human actions have not been well documented prior to 1990.

Of the most recent fire records available for the SFMA, the ignition cause is shown in table 2.2.

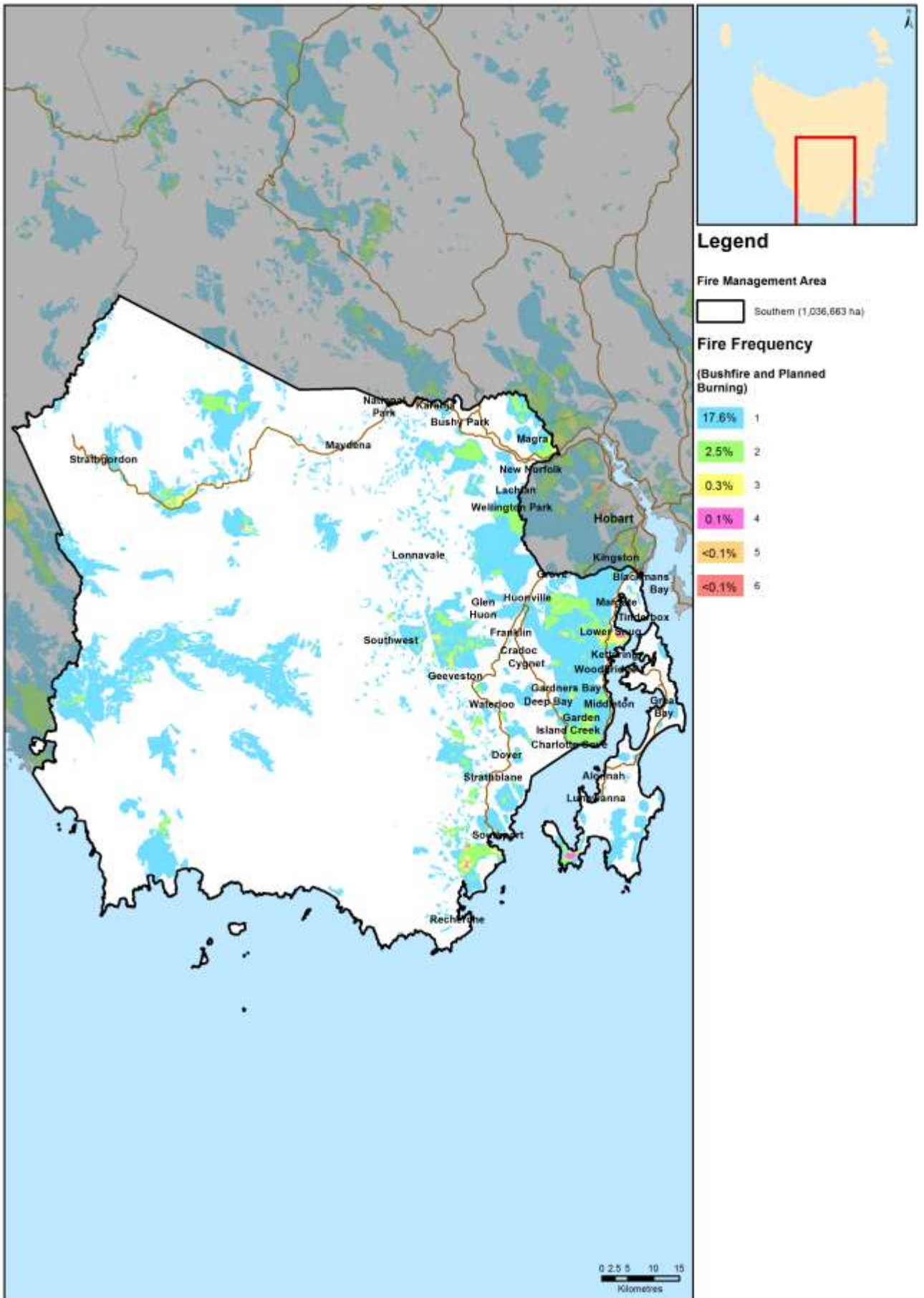| Ignition Cause	% of ignitions
Undetermined	21
Unknown	20
Arson	18
Lightning	15
Recreation	13
Escape	11

Table 2.2: Causes of ignition

Figure 2.6 Areas affected by fire (Fire Frequency) in the SFMA
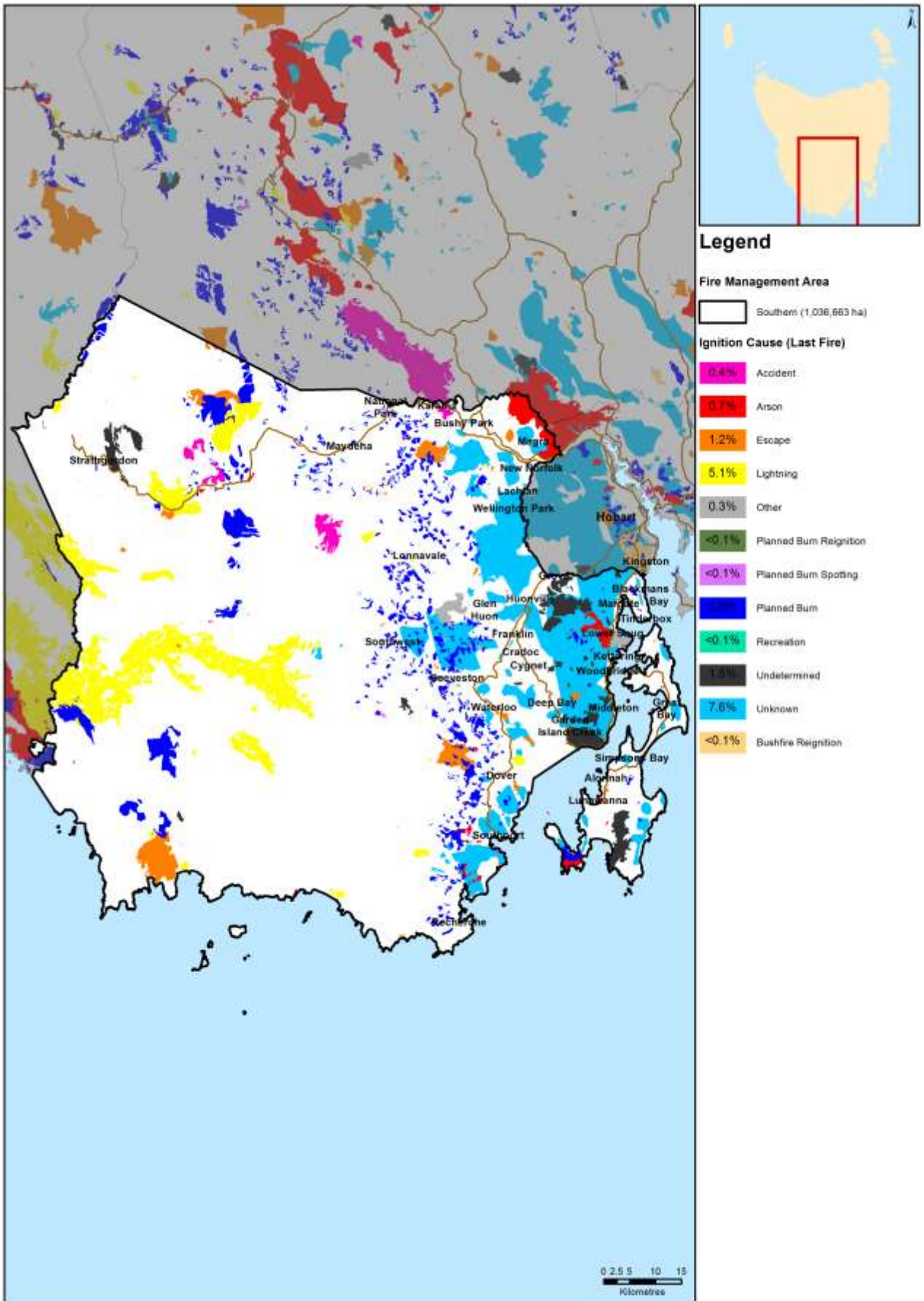
Figure 2.7 Ignition Causes in the SFMA

Chapter 3 Analysing and Evaluating Bushfire Risk

3.1   Analysing Bushfire Risk

Following the Australian Standard of risk (ISO 3100) bushfire risk has been considered spatially, assessing a combination of likelihood and consequence (PWS 2011). The Bushfire Risk Assessment Model (BRAM), model data run of February 2014 was used to analyse the landscape level risk for this plan. For a full analysis of the model, see Appendix 2.

To determine overall risk the NERAG (National Emergency Risk Assessment Guidelines August 2009) document (see Appendix 3) was used. The level of risk is determined by combining consequences and likelihood (see Appendix 3).

It must be noted that the BRAM and therefore the consequences, likelihood and risk outputs are based on available spatial data. The analysis has been undertaken on a statewide basis, and maps are presented as complete for Tasmania. There are however gaps in the data inside and outside areas of public land. This includes fire history information, particularly on private land, which contributes to ignition potential information (likelihood), and many of the agricultural values have not been well captured (consequence). Notwithstanding these limitations, the model does provide an objective spatial analysis of bushfire risk in a landscape context.

3.2   Likelihood

Likelihood is defined as a qualitative method to assess the likelihood rating to the consequences occurring. The likelihood of an event was generated by calculating ignition potential, suppression capabilities and fire behaviour potential, followed by assigning these output values to categories in a likelihood matrix. This is taken to mean the likelihood of a fire occurring in a specific area which surpasses the ability of the fire agencies to contain within the first 24 hours.

3.3   Consequence (values at risk)

Consequences are defined as a qualitative rating of damage from fire to values. The consequences were taken directly from the output generated through the Values at Risk spatial layer output.

While the values layer identifies a wide range of values in the SFMA, including critical infrastructure, agricultural land including grasslands and their economic significance are largely not part of the analysis (except where they are mapped as native grasslands). The agricultural grassland community is of particular importance with the loss of extensive grass impacting on the immediate viability of farming enterprises, which can have a major impact on the economy of the area.

3.4   Overall Risk

A representation of risk (see Appendix 4) is developed when you combine the factors of likelihood and consequence. The generated output map of risk shows qualitative areas of risk, not areas of perceived risk.

The model assists in objectively defining areas where genuine risk is present. In-depth analysis will indicate what factor is driving the risk for a given area.

3.5 Risk Analysis for the Southern Fire Management Area

The bush fire risk Model BRAM, discussed above, was utilised to examine risk across the SFMA. The results of this risk analysis are shown in Figure 3.1. Areas of highest risk identified are located in the southeast and northeast parts of the area, with scattered patches throughout.

In addition Phoenix Rapidfire, a bush fire simulator, developed by the University of Melbourne (Kevin Tolhurst and Derek Chong) was used to model the risk of fires impacting on communities present in the SFMA. This modelling was done as part of the state wide strategic fuel management assessment. The process involved modelling potential ignition points, incorporating severe fire weather components and examining fire behaviour based on current fuel loads to identify the potential impact on human settlement areas. Figure 3.2 shows potential ignition points that may impact on communities in the SFMA with areas (ha) of impact under current fuel loads.

An understanding of the location of potential ignition points that may impact on communities is crucial. It must be understood that such analysis has many limitations but does provided an indication of where communities may be under risk as well as identify areas where strategic burning will assist in changing fire behaviour.

Strategic fuel reduction burning is one treatment to reduce risk to communities throughout the SFMA. However, not all vegetation and land use types are treatable through burning. Figure 3.3 shows treatability of fuels through fuel reduction burning in the SFMA. In summary, approximately 30% of fuels are treatable by burning, while 70% are untreatable.

The distinction between treatable and untreatable fuel was determined by considering the TASVEG flammability attributes and gives a general indication of suitability. At an operational level the distinction between treatable and untreatable fuels will need to be determined in the field.

The untreatable portion (70% of the area) includes agricultural land. This is primarily because whilst agricultural land will burn, it is not generally targeted for fuel reduction burning as the risk can be seasonally variable. It is likely that the dryland agricultural land through the region does contain areas of grasslands that are treatable through burning, however current TASVEG mapping does not break the agricultural land mapping unit into different categories. Land use mapping may be incorporated into future risk analyses as data become available allowing refinement of this category.

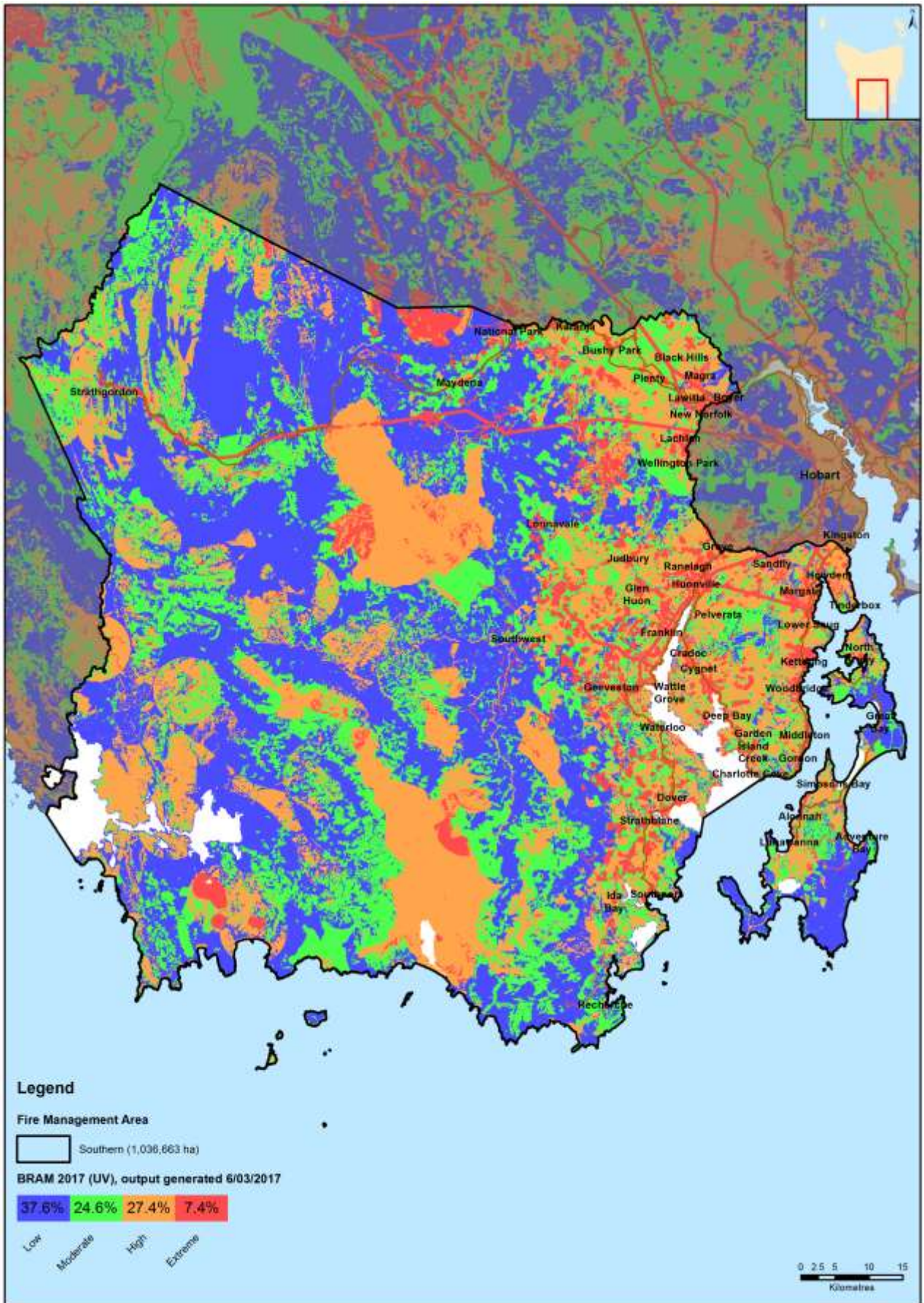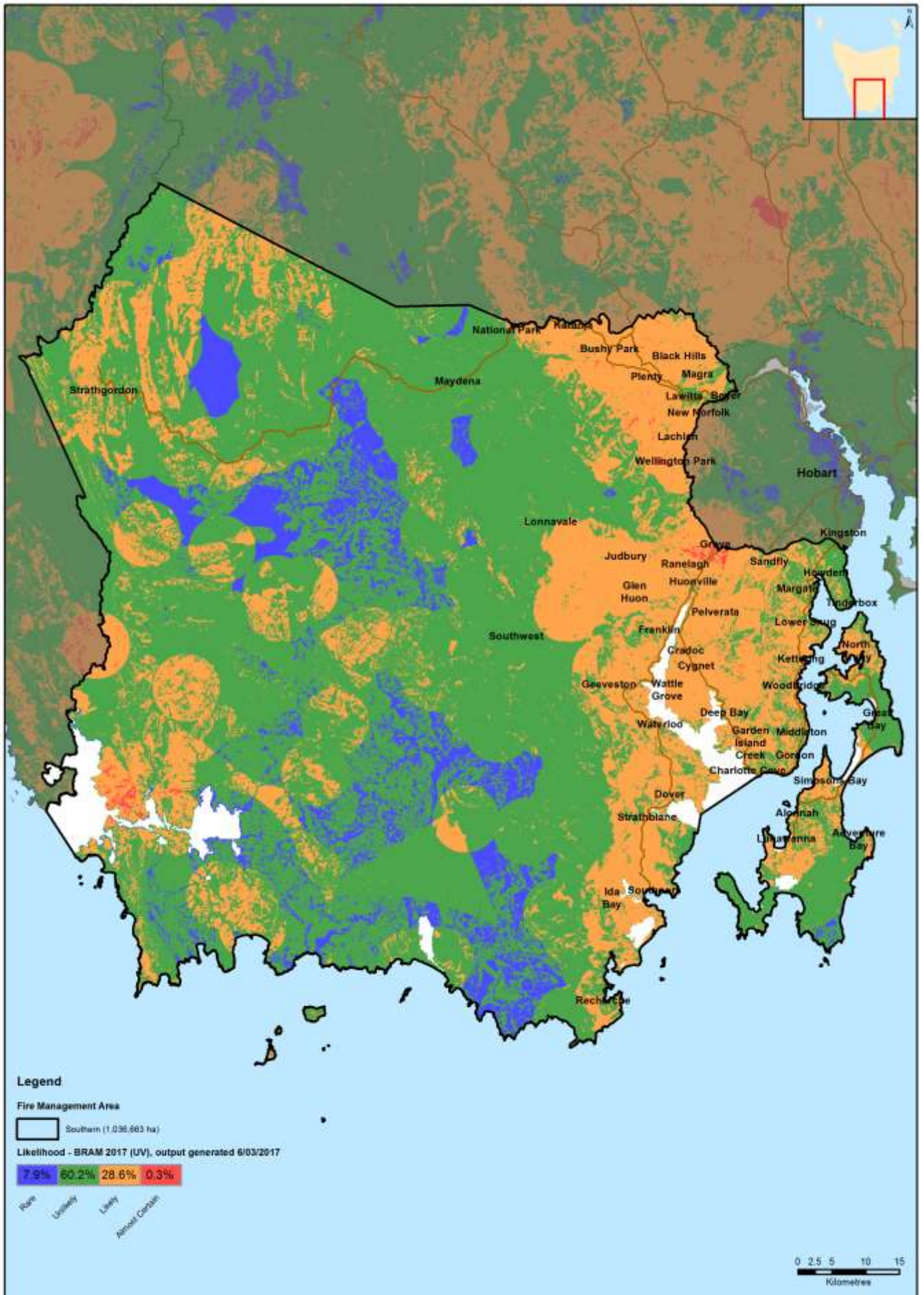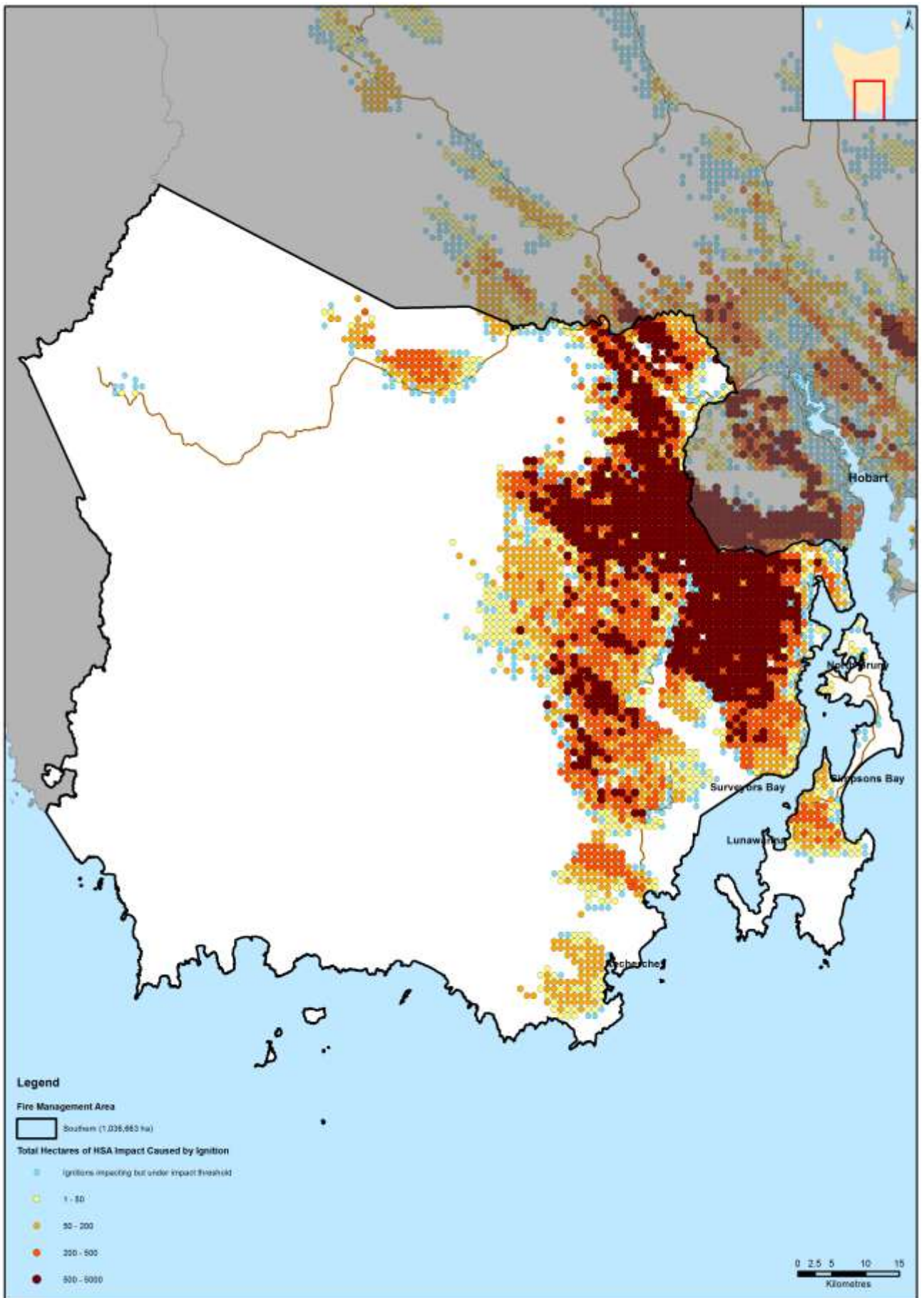**Figure 3.1: BRAM - Bushfire risk across the SFMA.**

Figure 3.2: BRAM - Likelihood across the SFMA

Figure 3.3: Potential ignition points that may impact on communities in the SFMA with areas (ha) of impact under current fuel loads, using Phoenix Rapidfire simulation modelling, State Fire Management Council.

Figure 3.4: Treatability of fuels through fuel reduction burning in the SFMA.

Chapter 4 Bushfire Risk Treatment

4.1 Region Wide Controls

The following controls are currently in place across the SFMA to assist in the strategic management of bushfire related risk:

- Legislative controls – including abatements, fire restrictions etc.
- Public education campaigns and the use of TFS and SFMC state-wide programs tailored to suit local needs; (eg Private land burning; Community Protection Planning; Bushfire Ready Neighbourhoods)
- State-wide arson prevention programs developed in conjunction with TAS Police and TFS;
- Setting of appropriate land subdivision and building standards in line with State Bushfire Prone Area Building Standards;
- Performance monitoring and reporting of FPP outcomes to the relevant Emergency Management Council and State Fire Management Council as required by the Tasmanian Emergency Management Plan and the Fire Service Act.

4.2 Asset Specific Treatment Strategies

There are five broad asset specific treatment strategies that have been used to manage the bushfire risks identified in the Community Risk Assessment. They include:

- Fuel management – Treatments include the reduction / modification of bushfire fuels through manual, chemical and prescribed burning methods;
- Ignition management - Treatments aim to reduce the occurrence of human induced ignitions in the landscape;
- Preparedness – Treatments focus on providing suitable access and water supply arrangements that will assist with fire fighting operations;
- Planning – Treatments relate to the development of plans that will improve the ability of firefighters and the community to respond to bushfire; and
- Community Engagement – Treatments seek to build relationships, raise awareness and change behaviours relating to the management of bushfire related risks within the community.

4.3 Community Assessment

Strategic assessment tools have been used to conduct a broad scale assessment across the SFMA to identify communities vulnerable to bushfire, that require more detailed assessment using more locally specific processes.   These areas were identified through a process that utilised and combined local knowledge, BRAM risk assessment and phoenix ignition potential modelling.   A sub-group of the SFMA Committee, consisting of members with specific fire expertise and knowledge across the area contributed to the identification of both the communities at risk and the broader strategic areas for potential actions.

The results of the strategic assessment for the SFMA are outlined in table 4.1 and mapped in Appendix 1. A number of communities already have specific plans in place, these are summarised in Appendix 5.   In addition to communities, areas of strategic importance were also identified, shown in Table 4.2 and mapped in Appendix 1.

It is also important to note that within the SFMA there are a number of communities that are located close to FMAC boundaries, with some areas of strategic importance that span several FMACs. In these cases it is vital that FMACs seek to keep each other informed of planned activities and discuss possible options.

Community
Pelverata
Lucaston
Grove
Oyster Cove
Nicholls Rivulet
Glendevie
Middleton
Maydena
Kingston
Margate/Snug

See locality maps in Appendix 1

Table 4.1: Priority communities identified in the strategic assessment process in the SFMA.

Whilst individual communities are listed in the table above, due to many communities being in close proximity to each other the actual area for mitigation works will be determined in the field and may result in several communities being treated together eg. Grove/Mountain River/Crabtree.

Area
Judds Creek/Judbury
Glen Huon
Lonnavale
Snug Tiers (including Grey Mt)
Glenfern/Plenty Valley
Coningham
Adventure Bay
Lune River

See Figure 4.1 and locality maps in Appendix 1

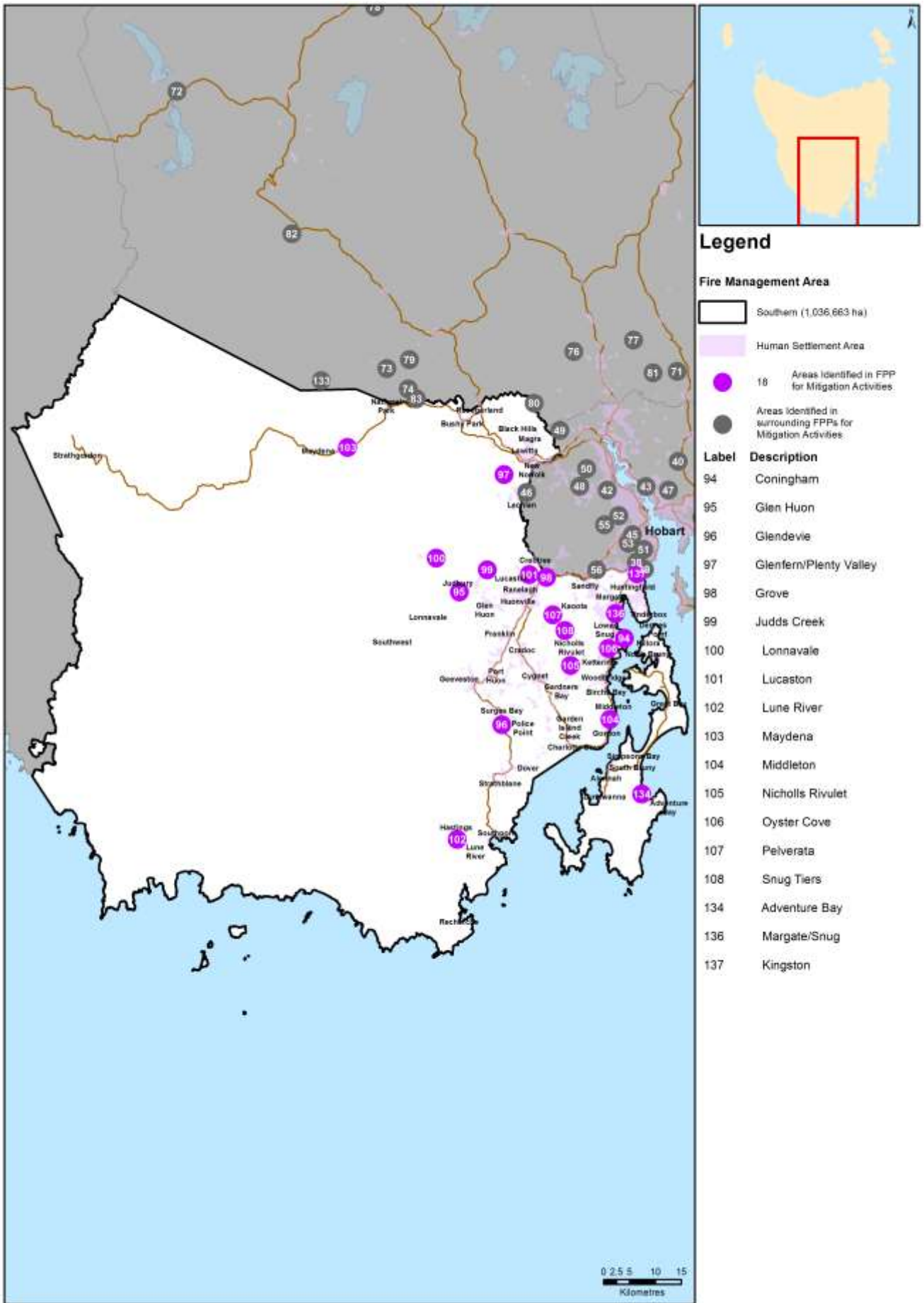**Table 4.2: Strategic areas for potential treatment in the SFMA.**

Figure 4.1 Priority areas in the Southern FMA.

It is important to note that these areas identified give a general location only. They will require field investigation to determine what mitigation options are available. To allow mitigation treatments to be carried out safely and effectively other areas not currently highlighted may need to be included.

In addition there may be Fuel Reduction Burning currently planned in areas that are not listed above which may provide some protection to communities and critical infrastructure.

Note: Mitigation options include:

- Fuel Reduction Burning

- Fire trail construction and maintenance

- Water point construction

- Other prescribed activities including Community engagement and education in bushfire risk

4.4   Treatment Selection and Priorities

The strategic bushfire risk assessment undertaken for the entire SFMA, described above, was used to identify key communities and assets considered to be at risk of bushfire and prioritise the preparation and implementation of different treatment strategies. This information is contained in Appendix 6 – Treatment Schedule.

4.5   Annual Works Programs

The annual program of works is identified in the Treatment Schedule at Appendix 6. Land managers and fire agencies identified as responsible for completion of the treatments identified in the *Treatment Schedule* will be consulted with negotiation for incorporation of the works into their respective annual works programs and planning processes. The Treatment Schedule in Appendix 6 also includes other existing works programs of agencies and organisations with land management responsibilities in the SFMA, as represented on the SFMA Committee.

4.6   Implementation

When the treatments identified in this FPP are implemented there are a number of issues that need to be considered by the responsible agency including environmental impact, smoke management, community education and prescribed burn plans.

4.7   TFS Community Fire Safety Programs

Community Education- Bushfire-Ready Neighbourhoods Program and Bushfire Policy and Planning- Community Protection Planning have the following plans for the Southern FPP area:

TFS Bushfire Protection Plans

FMAC	Bushfire Protection Plan	Date
Southern	Alonnah	October 2013
Southern	Conningham	December 2012
Southern	Franklin Area	March 2015
Southern	Geeveston Area	October 2014
Southern	Glen Huon Area	September 2015
Southern	Glenfern Area	October 2013
Southern	Kettering Woodbridge	October 2013
Southern	Margate Area	October 2015
Southern	Middleton Area	February 2014
Southern	Nicholls Rivulet Area	July 2013
Southern	Pelverata Area	July 2013
Southern	Sandfly Area	October 2015
Southern	Snug Area	November 2012
Southern	Tinderbox Area	November 2012
Southern	Verona Sands Area	October 2014
Southern	Adventure Bay	November 2016
Southern	Grove/Lucaston/Mountain River/Crabtree/Ranelagh	February 2017
Southern	Cygnet	November 2018

TFS Bushfire Response Plans

FMAC	Bushfire Response Plan	Date
Southern	Conningham	December 2012
Southern	Glenfern Area	August 2013
Southern	Kettering Woodbridge	September 2013
Southern	Middleton Area	February 2014
Southern	Nicholls Rivulet Area	February 2013
Southern	Pelverata Area	February 2013
Southern	Sandfly Area	October 2015
Southern	Snug Area	November 2012
Southern	Tinderbox Area	November 2012
Southern	Verona Sands Area	March 2014
Southern	Cygnet	November 2018

TFS Bushfire Mitigation Plans

FMAC	Bushfire Mitigation Plan	Date
Southern	Sandfly/Longley	December 2016
Southern	Pelverata	2016
Southern	Glenfern	2016

Community Development and Education

Bushfire-Ready Neighbourhoods Program - Tasmanian Fire Service

A Community Development Coordinator and regionally based Community Development Officers (Hobart, Launceston and Burnie) have identified 22 communities/areas state-wide which are being targeted by the Bushfire-ready neighbourhoods program as part of round 2 (2016 to 2018) of the program. The program takes a community development ('grass roots') approach and recognises that there isn't a one size fits all approach to bushfire preparedness, highlighting that 'we all play a part' (individuals, TFS, communities). Specifically the program takes a community led approach providing local community members in higher bushfire risk areas community engagement activities for preparing for and preventing bushfire/s. The program is facilitated by accessing existing community networks and resources and developing localised strategies in bushfire preparedness. Some of the planned community engagement activities include; community forums, information sessions for communities and brigades alike, workshops, property assessments, field days, focussed group activities and establishment of Bushfire-ready neighbourhood groups.

For more information about the Bushfire-Ready Neighbourhoods Program visit: fire.tas.gov.au/brn

Round 2 Communities- 2016 to 2018 in the Southern FMA: Nichols Rivulet, Magra, New Norfolk area and Maydena.

Chapter 5 Monitoring and Review

Monitoring and review processes are in place to ensure that the FPP remains current and valid. These processes are detailed below to ensure outcomes are achieved in accordance with the Treatment Schedule.

5.1   Review

This FPP, including appendices, will be subject to a comprehensive review every five (5) years from the date of approval, unless significant circumstances exist to warrant earlier review. This would include:

- Changes to the FPP area, organisational responsibilities or legislation;
- Changes to the bushfire risk in the area; or
- Following a major fire event.

5.2   Monitoring

The Treatment Schedule at Appendix 6 is a living document and progression towards completion of the treatments will be monitored and reviewed at least every six (6) months. The Treatment Schedule will be updated as treatments are progressed and completed.

5.3   Reporting

A report detailing progress towards implementation of this FPP will be provided annually.

References

Parks and Wildlife Service (unpublished). Bushfire Risk Assessment Model Project Business Process Model (2008). Department of Primary Industries, Parks, Water and Environment, Hobart.

Parks and Wildlife Service (unpublished). Tasmanian Bushfire Risk User Guide (2010). Department of Primary Industries, Parks, Water and Environment, Hobart.

Parks and Wildlife Service (unpublished). Tasmanian Bushfire Risk Assessment Model V?? (2013). Department of Primary Industries, Parks, Water and Environment, Hobart.

NERAG Risk Assessment Guidelines.

Appendices

Appendix 1 – Maps of SFMAC displaying identified priority areas

Appendix 2 – BRAM – explanatory materials

Appendix 3 – NERAG risk assessment approach

Appendix 4 – Bushfire Risk Assessment Maps

Appendix 5 – Community specific plans already in place

Appendix 6 – Treatment schedule - annual works program

Appendix 7 – Description of vegetation communities

Appendix 1 – Maps of SFMAC displaying identified priority areas

It must be noted that the areas circled on these maps are to indicate the general area to be targeted for investigation and do not represent the boundaries of mitigation works. The actual boundaries for mitigation works will be determined after field investigations are undertaken.

SFMAC Priority Areas -Grove/Lucaston/Pelverata

**SFMAC Priority Areas -Snug Tiers/
Nicholls Rivulet/Conningham/Middleton**

SFMAC Priority Areas Kingston/Margate/Snug

SFMAC Priority Areas -Glendevie

SFMAC Priority Areas -Maydena

SFMAC Priority Areas -Lonnavale/ Glen Huon/Judds Ck/Glefern/Plenty Valley

SFMAC Priority Areas -Lune River

Appendix 2 - The Bush Fire Risk Model (BRAM)

Background

The Bushfire Risk Assessment Model (BRAM) is a software product that was developed by the Fire Management Section of the Parks and Wildlife Service (Department of Primary Industries, Parks, Water and Environment). The aim of the model is identify bush fire risk at a strategic level as well as to identify the elements driving actual bush fire risk.

A stakeholder group was set up to oversee the process. Stakeholders involved in developing the process included:

- o Parks and Wildlife Service;
- o Tasmania Fire Service;
- o Sustainable Timber Tasmania;
- o Tasmanian Farmers and Graziers Association;
- o State Emergency Service:
- o Forest Industries Association of Tasmania;
- o Local Government Association of Tasmania;
- o Resource management and conservation , DPIPWE;
- o NRM ;
- o Tasmanian Aboriginal land and Sea Council;

 Additional working groups were set up to advise on specialist areas such as values at risk, suppression capabilities, ignition potential, and fire behaviour.

The process is aligned to the Australian/New Zealand Standard AS/NZS 4360:2004 Australian Standard Risk Management and the updated standard AS/*NZS ISO 31000:2009 Risk management – Principles and guidelines.*   Risk is defined as the" effect of uncertainty on objectives" with a focus of the effect on the objectives

The process

The model is built in a geographic information system that utilizes various spatial orientated data, fire behaviour and fuel accumulation models and climate records. The data and values were developed by consensus of a range of stakeholders

The process applies the same set of assessment rules   to the data contained in the model, thus it can be applied across the state. The process is tenure blind

The   BRAM identifies the **likelihood and consequence of a fire** at a particular point. The risk is determined through the use of a qualitative risk matrix incorporating likely hood and values at risk (consequences). The process identifies the actual risk at that point not the perceived risk. The output is in the form of layers identifying the likelihood, values at risk and actual risk

The model uses 4 major areas to calculate risk

- o Fire behaviour potential - the manner in which fuel ignites, flame develops, and fire spreads and exhibits other related phenomena (likelihood).

- Ignition potential - the probability or chance of fire starting as determined by the presence of causative agents (likelihood).

- Suppression capability - the factors and limitations that are related to the ability to contain a bushfire upon detection (likelihood).

- Values at risk - a specific or collective set of natural resources and man-made improvements and/or developments that have measurable or intrinsic worth, and which could potentially be destroyed or otherwise altered by fire in any given area (consequence

Ignition potential
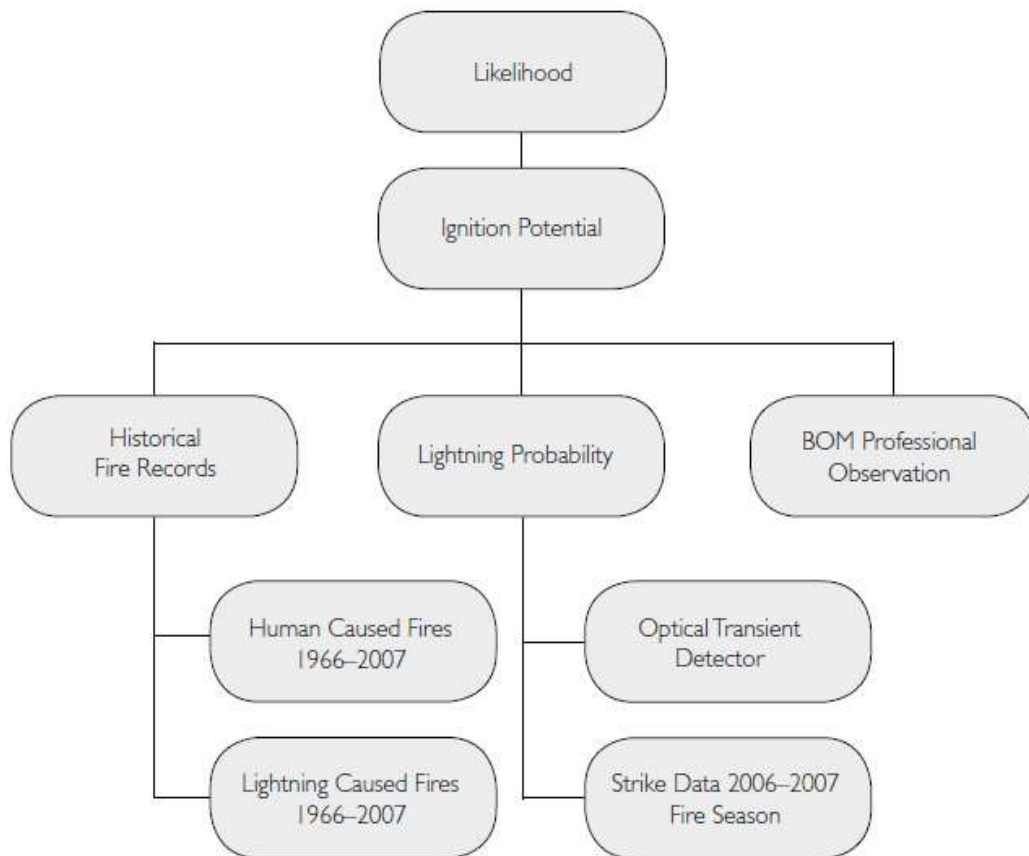
Suppression capabilities
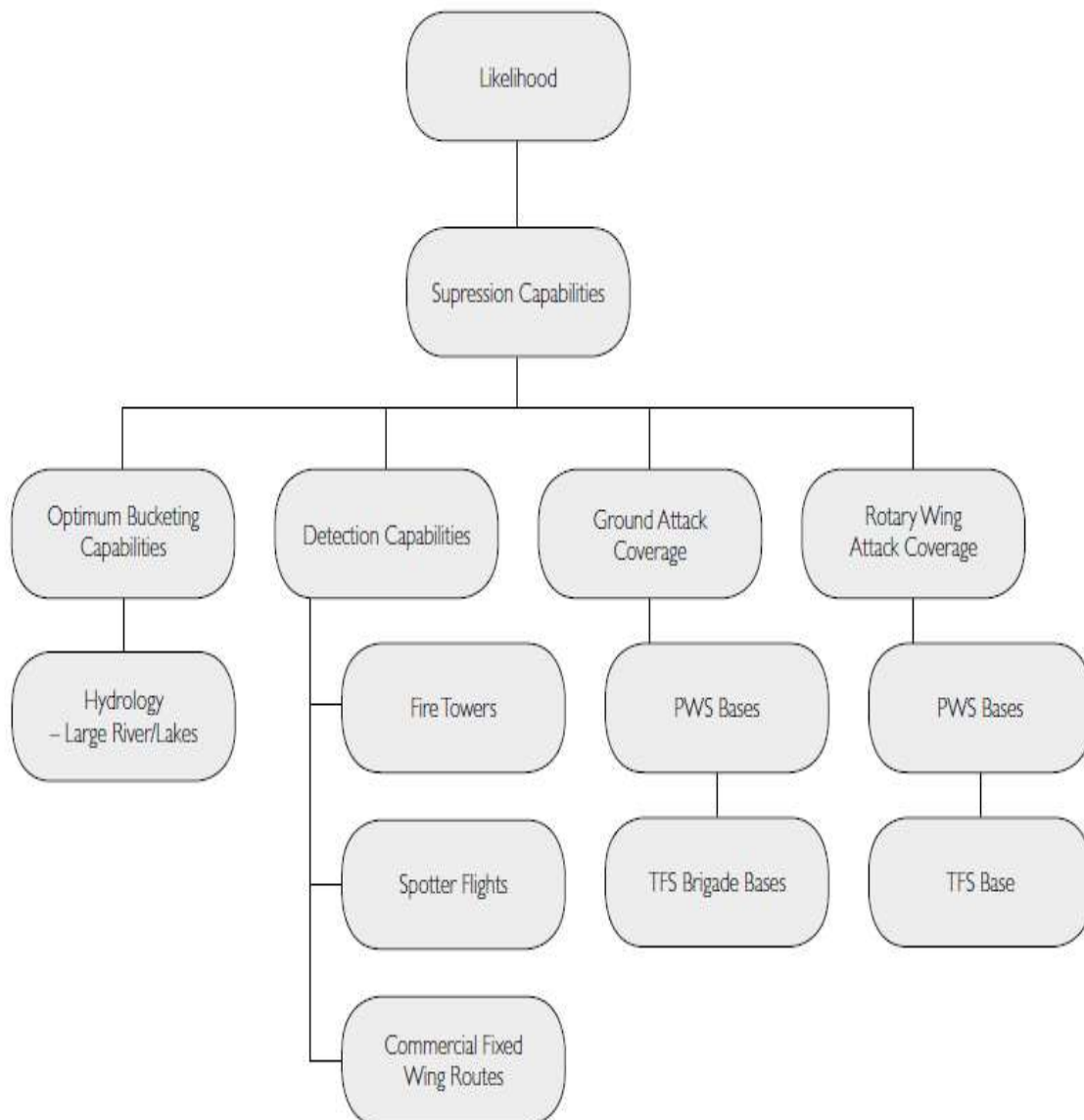
Fire Behaviour Potential
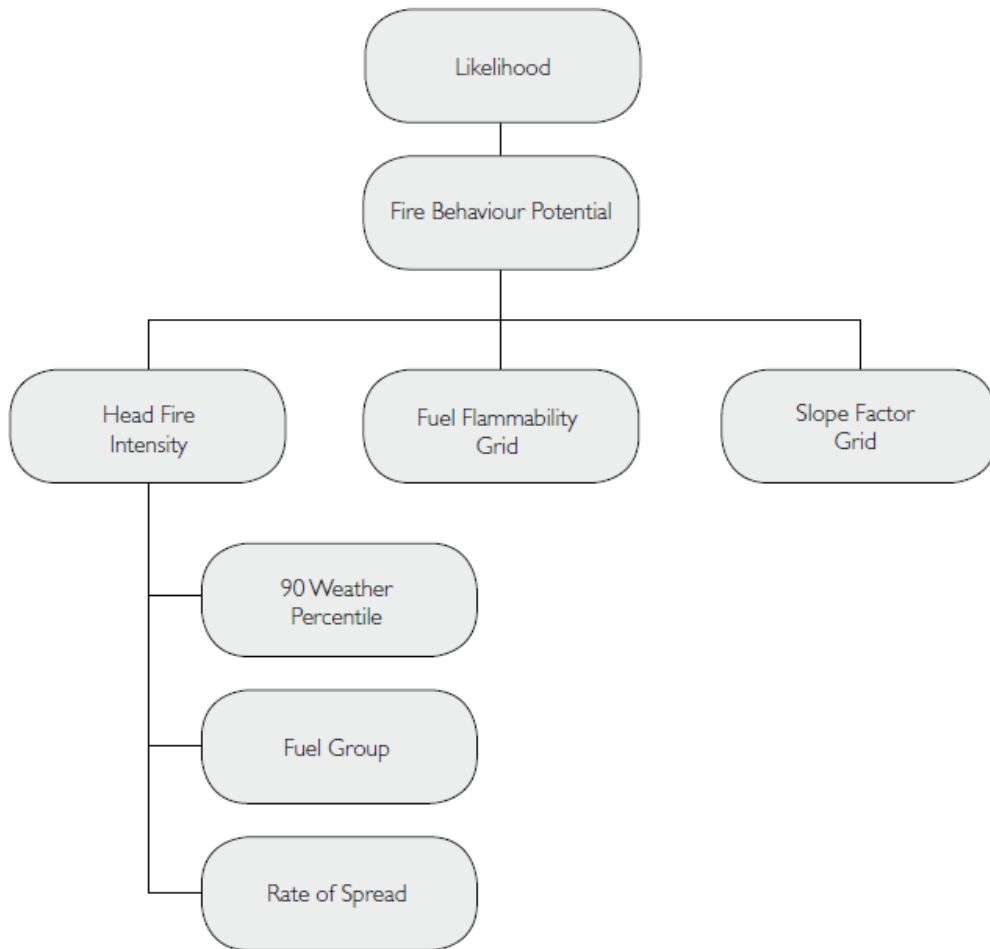
Values at risk
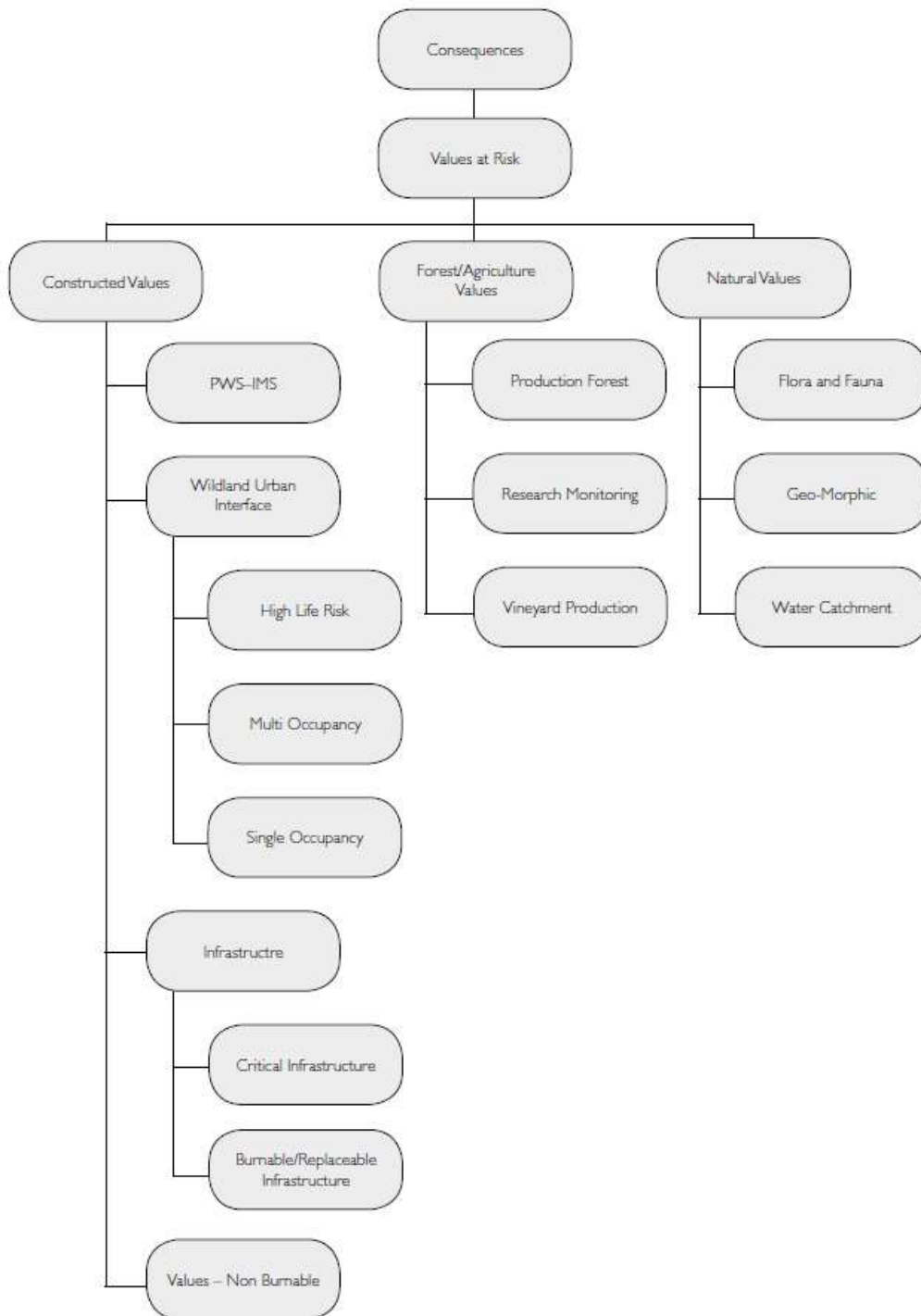
Limitations of the process

- BRAM **does not** incorporate the likelihood and consequence **at the same point** from a fire occurring in an adjacent area.

- BRAM does not display the risks posed by an area adjacent to a particular point.

- Mitigation works undertaken on adjacent areas do not change the risk at a particular point.

- The process is based on available data, there are significant gaps in data eg fire history on private lands,

- Untested assumptions – may over/underestimate risk

Appendix 3 – NERAG risk assessment approach

(Derived from the National Emergency Management Committee (2010), *National Emergency Risk Assessment Guidelines*, Tasmanian State Emergency Service, Hobart)

The NERAG provide a methodology to assess risks from emergency events and are principally concerned with risk assessment**.** The NERAG methodology was utilised in development of the BRAM to develop the final risk profile

The guidelines are not intended to address the entire risk management framework or the risk management process as outlined in AS/NZS ISO 31000:2009. However, because they focus on the assessment of risks from emergency events, they ultimately direct the management of emergency risks in line with the international standards for risk management.

The guidelines aim to provide a risk assessment methodology that:

- enables focus on risks in small (e.g. municipal) or large (e.g. regional and/or state and/or national) areas
- is useable for both risk 'from' and risk 'to' (e.g. risk from bushfire, risk to infrastructure from all or specific sources of risk)
- uses a scenario-based approach
- samples risk across a range of credible consequence levels
- identifies current risk under existing controls and residual risk assuming implementation of additional controls or control improvements
- provides base-line qualitative risk assessments and triggers for more detailed analysis
- allows risk evaluation at varying levels of confidence
- Provides outputs that are comparable, which rate risk and suggests means to reduce risk.

Risk analysis is the element in the process through which the level of risk and its nature is determined and understood. Information from risk analysis is critical to rank the seriousness of risks and to help decide whether risks need to be treated or not. In this phase, control opportunities are also identified. The analysis involves consideration of possible consequences, the likelihood that those consequences may occur (including the factors that affect the consequences), and any existing control that tends to reduce risks. During this phase the level of confidence in the analysis is assessed by considering factors such as the divergence of opinion, level of expertise, uncertainty, quality, quantity and relevance of data and information, and limitations on modelling. At the conclusion of this step, all identified risks are categorised into risk levels and given a risk rating, and statements concerning existing controls and their adequacy are made.

NERAG takes an all hazards approach and provides a method that is suitable for considering other sources of risk beside fire.

Consequence table

Consequence level	People	Environment	Economy	Public Administration	Social Setting	Infrastructure
Catastrophic	Widespread multiple loss of life(mortality > 1 in ten thousand), Health systems unable to cope, Displacement of people beyond a ability to cope	Widespread severe impairment or loss of ecosystem functions across species and landscapes, irrecoverable environmental damage	Unrecoverable financial loss > 3% of the government sector's revenues, asset destruction across industry sectors leading to widespread failures and loss of employment	Governing body unable to manage the event, disordered public administration without effective functioning, public unrest, media coverage beyond region or jurisdiction	Community unable to support itself, widespread loss of obj3ects of cultural significance, impacts beyond emotional and psychological capacity in all parts of the community	Long term failure of significant infrastructure and service delivery affecting all parts of the community, ongoing external support at large scale required
Major	Multiple loss of life (mortality > 1 in 0ne hundred Thousand), Heath system over stressed, Large numbers of displaced people(more than 24 hours)	Serious impairment or loss of ecosystem functions affecting many species or landscapes, progressive environmental damage	Financial loss 1-3% of the governments sector's revenues requiring major changes in business strategy to (partly) cover loss, significant disruptions across industry sectors leading to multiple business failures and loss of employment	Governing Body absorbed with managing the event, public administration struggles to provide merely critical services, loss of public confidence in governance, media coverage beyond region jurisdiction	Reduces quality of life within the community, significant loss or damage to objects of cultural significance, impacts beyond emotional and psychological capacity in large parts of the community	Mid- to long term failure of significant infrastructure and service delivery affecting large parts of the community, initial external support required
Moderate	Isolated cases of loss of life (mortality > 1 in one million), Health system operating at maximum capacity, isolated cases of displacement of people(less than 24 hours)	Isolated but significant cases of impairment or loss of ecosystem functions, intensive efforts for recovery required	Financial loss 0.3 – 1% of the governments sector's revenue requiring adjustments to business strategy to cover loss, disruptions to selected industry sectors leading to isolated cases of business failures and multiple loss of employment	Governing body manages the event with considerable diversion from policy, public administration functions limited by focus on critical services, widespread public protests, media coverage within region or jurisdiction.	Ongoing reduced services within community, permanent damage to objects of cultural significance, impacts beyond emotional and psychological capacity in some parts of the community	Mid-term failure of(significant) infrastructure and service delivery affecting some parts of the community, widespread inconveniences
Minor	Isolated cases of serious injury, heath system operating within Normal parameters	Isolated cases of environmental damage, one off recovery efforts required	Financial loss 0.1-0.3% of the governments sector's revenues requiring activation of reserves to cover loss, disruptions at business level leading to isolated cases of loss of unemployment	Governing body manages the event under emergency regime, Public administration functions with some disturbances, isolated expressions of public concern, media coverage within region or jurisdiction	Isolated and temporary cases of reduced services within the community, repairable damage to objects of cultural significance, impacts within emotional and psychological capacity of the community	Isolated cases of short– to mid- term failure of infrastructure and service delivery. Localised inconveniences
Insignificant	Near misses or minor injuries, no reliance on health system	Near missis or incidents without environmental damage , no recovery efforts required	Financial loss , 0.1% of the governments sector's revenues to be managed within standard financials provisions,	Governing body manages the event within normal parameters, public administration functions without disturbances,	Inconsequential short-term reduction of services, no damages to objects of cultural significance, no adverse emotional	Inconsequential short-term failure of infrastructure and service delivery, no disruption to the public services

			inconsequential disruptions at business level	public confidence in governance, no media attention	and psychological impacts	

Impact Category Definitions

Impact Category Definitions	
People	Relates to the direct impacts of the emergency on the physical health of people/ individuals and emergency services(i.e. health systems) ability to manage Mortality defined as the ration of deaths in a an area of the population to the population of that area; expressed as per 1000 per years
Environment	Relates to the impacts of the emergency and its effects on the ecosystem of the area, including fauna and flora
Economy	Relates to the economic impacts of the emergency on the governing body as reported in the annual operating statement for the relevant jurisdiction, and industry sectors as defined by the Australian Bureau of statistics
Public Administration	Relates to the impacts of the emergency on the governing body's ability to govern
Social setting	Relates to the impacts of the emergency on society and its social fabric, including its cultural heritage, resilience of community
Infrastructure	Relates to the impacts of the emergency on the areas infrastructure/ lifelines/utilities and its ability to service the community Long term failure = repairs will take longer than 6 months Mid-to long term failure = repairs may be undertaken in 3 to 6 months Mid-term failure = repairs may be undertaken in 3 to 6 months Short to mid term failure = repairs may be undertaken in 1 week to 3 months Short-term failure = repairs may be undertaken in less than 1 week

Likelihood table

Likelihood level	Frequency	Average Recurrence Interval	Annual Exceedance probability
Almost certain	One of more per year	< 3 years	.0.3
Likely	Once per 10 years	3 – 30 years	0.031 – 0.3
Possible	Once per one hundred years	31- 300 years	0.0031 – 0.03
unlikely	One per thousand years	301 – 3,000 years	0.00031 – 0.003
Rare	One per ten thousand years	3,001 – 30,000 years'	0.000031 – 0.0003
Very Rare	Once per hundred thousand years	30,001 - 300,000 years	0.0000031 – 0.0003
Almost Incredible	Less than one per million years	>300,000 years	<0.0000031

Qualitative risk matrix

The qualitative risk matrix combines a level of consequence with a level of likelihood to determine a level of risk. The risk level, together with the confidence in the overall assessment process and other factors, will determine the need for detailed analysis and inform the treatment of risks

Consequence level

Likelihood level	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Medium	Medium	High	Extreme	Extreme
like	Low	Medium	High	High	Extreme
Possible	Low	Low	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium
Very Rare	Low	Low	Low	Low	Medium
Almost incredible	Low	Low	Low	Low	low

Appendix 4 – Bushfire Risk Assessment Maps – likelihood and values at risk

Legend

Fire Management Area

☐   Southern (1,036,663 ha)

VAR - BRAM 2016 (UV), output generated 24/03/2016

| 29.6% | 29.1% | 25.9% | 8.1% | 4.1% |

Insignificant   Minor   Moderate   Major   Catastrophic
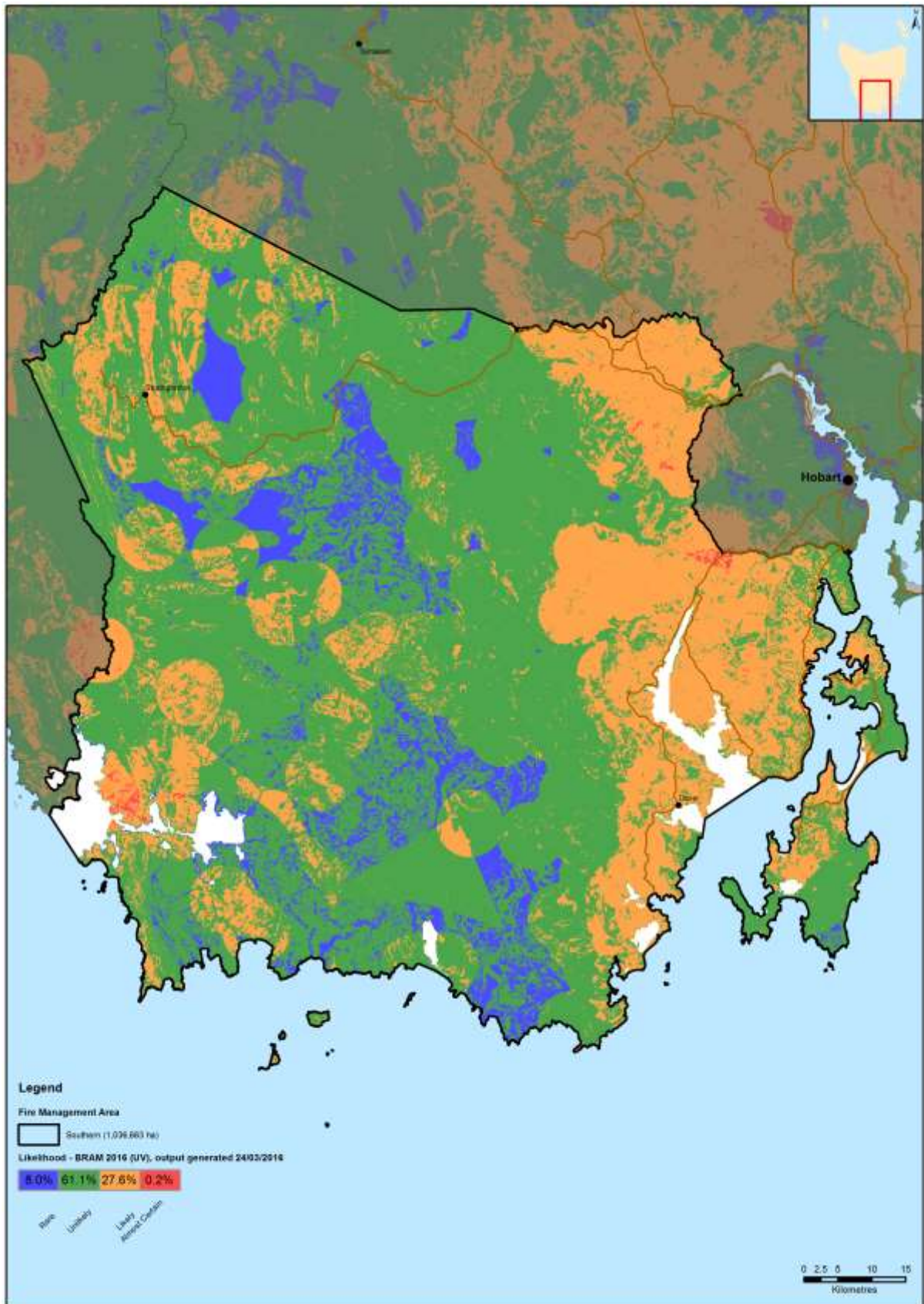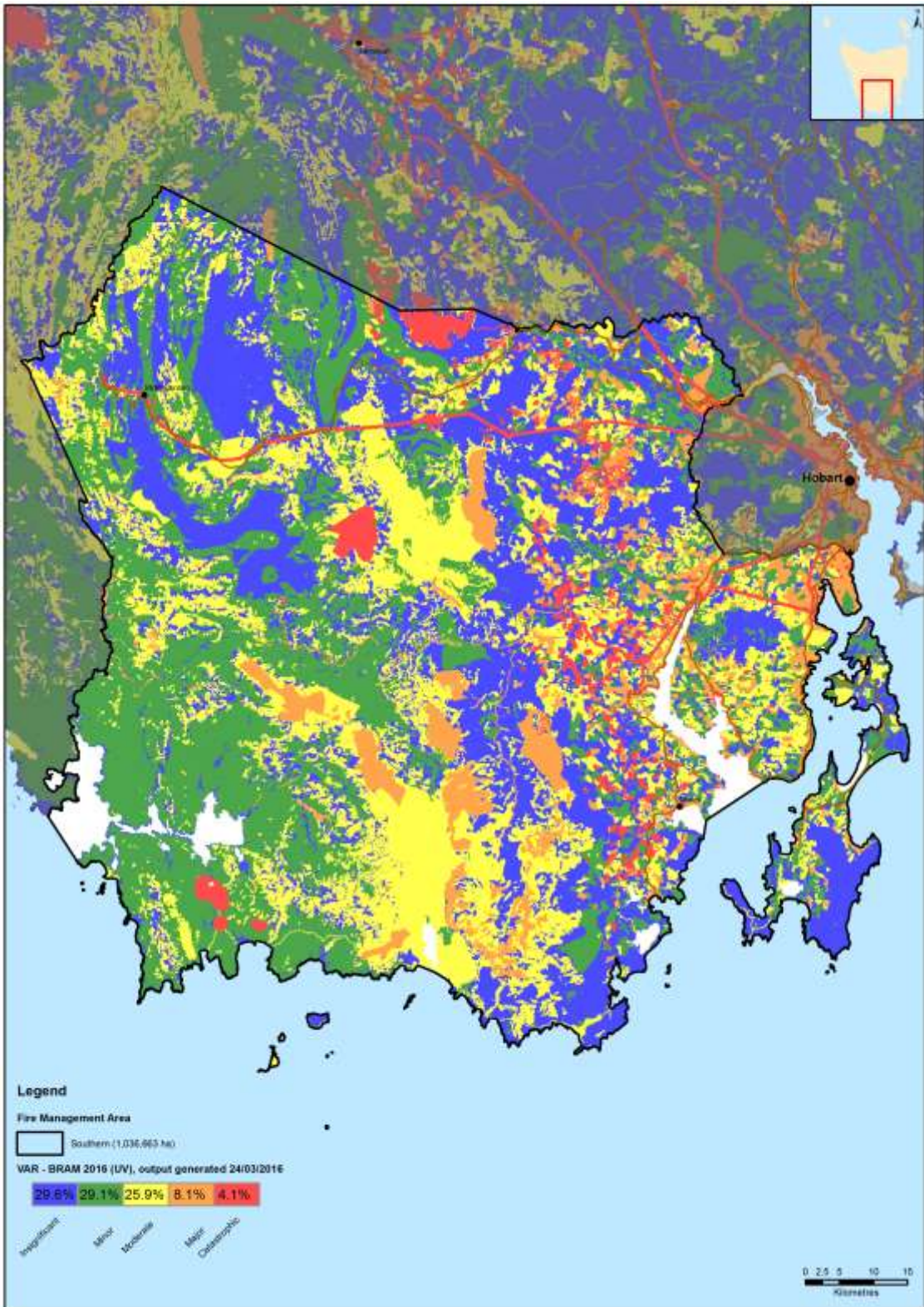
Appendix 5 – Community specific plans already in place

TFS Community Bushfire Response Plan

The purpose of a Community Bushfire Response Plan, (CBRP) is for emergency managers to better protect communities and their assets during bushfire emergencies.

TFS Community Bushfire Protection Plan

The purpose of a Community Bushfire Protection Plan, (CBPP) is for community members to be provided with local information to assist with bushfire preparation and survival.

TFS Community Bushfire Mitigation Plan

The purpose of a Community Bushfire Mitigation Plan is to provide guidance regarding bushfire fuel management; to increase community bushfire safety and provide protection to important community assets.

TFS Bushfire Ready Neighbourhoods (BRN) program

BRN is a community based prevention and preparedness strategy for bushfire prone communities. It is a grass roots approach that works closely with identified communities and incorporates a number of activities including community forums, workshops, property assessments, field days and focussed group activities.

PWS Southern Region Strategic Fire Management Plan

The purpose of this plan is to minimise the risk of bushfires in national parks and reserves and other crown land by providing guidance and establishing planning framework that supports activities around fire prevention, fire preparedness, fire response, and fire recovery.

Appendix 6 – Treatment schedule - annual works program

Location	Summary	Tenure	Previous Treatment including current plans	Action required	Project implementation	Timeframe for completion
COMMUNITIES						
Pelverata 52	Small community located in a heavily forested valley. Mainly wet forest types.	Majority private Property. PWS managed land at Snug Tiers and Sherwood Hill Conservation Area	TFS Community Protection and Response Plans. BRU completed Bushfire Mitigation Plan for Pelverata. TFS BRN program in place.	Implement bushfire mitigation strategy on Private lands adjacent to the community and on PWS lands at Snug Tiers and Sherwood Hill	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property. Due to wet forest types- part of this areas risk can be mitigated through community education activities	
Lucaston/Grove 49/56	Small communities located in proximity to heavily forested areas in the foot hills of the Wellington Range. Could also include the settlements of Crabtree and Mt River	Private Property	TFS Community Protection and Response Plans. A round 1 BRN community 2014-16	Investigate mitigation options.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property	
Longley/Lower Longley	Small community located in close proximity to heavily forested areas. These locations are in close Proximity to the Hobart FMAC so should be discussed with HFMAC at a planning stage.	Private Property	Partly covered in existing TFS Response and Protection Plans.	Review current CPP plans and include areas not currently covered. Investigate mitigation options.	BRU to review coverage of current plans and update as required. BRU to provide advice on procedures to be used when undertaking burning on Private Property	
Glendevie 59	Small community located in close proximity to heavily forested areas.	Private Property. Permanent Timber Production Zone.	No plans currently in place.	Prepare TFS Protection and Response plan. Investigate mitigation options.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property. TFS CPP unit to prepare Protection and Response Plans.	
Middleton 53	Small community with many residences spread throughout the forested areas to the west of the Channel Highway.	Private Property.	Partly covered in existing TFS Response and Protection Plans.	Investigate mitigation options.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property.	

Adventure Bay 134	Small and itinerant community with one way road access	Private Property, Permanent Tiber Production Zone and PWS managed land	Covered by TFS Protection Plan.	Investigate mitigation options.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property
Maydena 54	Small isolated community located in the Tyenna Valley. Surrounded by heavy forest and pine plantations. A town historically supported by the timber industry with many residents involved in forest and fire management activities.	Private Property, Norske Skog private free hold, Permanent Timber Production Zone.	Current TFS response and protection plans are in place. Due to the proximity of forest operations the town is regularly involved with discussions regarding silvicultural burning undertaken by both Norske Skog and STT	Investigate mitigation options with particular regard to surrounding forest management activities.	Norske Skog to burn pine slash in close proximity to township as a protection measure. NSPM and STT to review current and future operations in regard to reducing bushfire risk to the town. Significant community engagement is taking place to manage concern in the community about planned burning.
Margate/Snug 136	Communities with numerous small acre blocks in bushland on narrow, dead end roads. Towns located close to the forest. Includes Barretta and Electrona.	Private Property.	TFS Community Protection and Response Plans.	Investigate mitigation options.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property
Kingston 137	Urban area in close proximity to forest. Remnant pockets of bushland scattered through the urban area.	Private Property, PWS managed land, local government land.	TFS Community Protection and Response Plans.	Investigate mitigation options, particularly fuel reduction burning in known fire path to the north.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property

Location	Summary	Tenure	Previous Treatment including current plans	Action required	Project implementation	Timeframe for completion
Strategic Areas						
Judds Creek 50	Modelling suggests that fires starting in this area may have a large impact on Human Settlement Areas. South facing area with a mixture of vegetation types. Many spurs and ridges that may be suitable for FRB	Private Property, Permanent Timber Production Zone.	No plans currently in place.	Investigate mitigation options for this area.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property. Due to some areas of wet forest types- part of this areas risk can be mitigated through community education activities.	
Glen Huon 46	Modelling suggests that fires starting in this area may have a large impact on Human Settlement Areas. This area is predominately a large north facing slope.	Private Property, Permanent Timber Production Zone, Norske Skog Private Freehold	No plans currently in place.	Investigate mitigation options for this area.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property	
Lonnavale/ Judbury 57	Modelling suggests that fires starting in this area will have a large impact on Human Settlement Areas. The Russell Ridge forms a large part of this area. Contains a variety of forest types including those suitable for FRB. Likely to be large burning units.	Private Property, Permanent Timber Production Zone, PWS managed land.	No plans currently in place, however there have been a number of forestry operations in the general area in the past that may be useful in fire management planning	Investigate mitigation options for this area.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property. Due to some areas of wet forest types- part of this areas risk can be mitigated through community education activities.	
Grey Mt/Tobys Hill/Snug Tiers 47	Modelling suggests that fires starting in this area may have a large impact on Human Settlement Areas. A variety of vegetation types, some suitable for FRB. Effective mitigation activities in this area will provide some protection to many communities in the greater Channel area.	Private Property and PWS managed land.	The current PWS planned burning program contain some units within the general area.	Investigate mitigation options including reviewing and expanding current PWS planned operations in this area	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property. Appropriate support to be provided to PWS to further develop burning options on land under their management. Due to some areas of wet forest types- part of this areas risk can be mitigated through community education activities.	

Glenfern/Plenty 49	Modelling suggests that fires starting in this area may have a large impact on Human Settlement Areas. Mainly Drier forest types on steep ridge country. Strategically important to New Norfolk and communities further south.	Private Property, Norske Skog private free hold, Permanent Timber Production Zone, some PWS managed land	TFS response and protection plan are currently in place. This area is also on the fringe of intensive forestry activities and has been affected by forestry operations over a number of years	Investigate mitigation options for this area. PWS have highlighted a possible burn on the New Norfolk town boundary that could be included with this area.	BRU to provide advice on procedures to be used when planning and undertaking burning on Private Property. Appropriate support to be provided to PWS to further develop burning options on land under their management. Norske Skog and STT to review possible mitigation options in relation to current and planned forest management activities in this area	
Coningham 51	Modelling suggests that fires starting in this area are likely to have an impact on Human Settlement Areas. Dry forest that has a history of regular fires.	Mainly PWS managed land and potentially private property.	TFS response and protection plans are currently in place. PWS have a local fire management strategy in place	Review current PWS plans to determine if any Private Property should be included in future mitigation activities.	PWS to be provided with appropriate support to undertake mitigation activities in this area.	
Lune River 58	Areas of Buttongrass are in close proximity to dwellings. Modelling suggests that fires starting in this area are likely to have an impact on Human Settlement Areas.	PWS managed land and Permanent Timber Production Zone and Private Property	STT have some FRB planned in the Lune Plains area.	Review planned FRB. Investigate mitigation options to including the lands surrounding Southport Lagoon.	A fuel reduction burn was completed for Lune Plain in May 2017 and covered 722 ha. PWS and STT to consult in relation to future mitigation options.	

Appendix 7 – Description of vegetation types

Description of broad veg community types contained in the TASVEG mapping dataset:

Agricultural, urban and exotic vegetation

This broad vegetation group is mainly non-native vegetation and includes agricultural land, marram grassland, Spartina marshland, plantations for silviculture, regenerating cleared land, urban areas and weed infested areas. It also includes Pteridium esculentum fernland which is dominated by the native bracken fern, and Permanent easements, which may be occupied by native vegetation.

Dry sclerophyll forests

Dry sclerophyll forests and woodlands are typically dominated by eucalypts under 40 m in height, and have a multi-layered understorey dominated by hard-leaved shrubs, including eucalypt regeneration .Dry sclerophyll forests are mainly found on dry, infertile and exposed sites and are largely confined to coastal areas.

Highland Treeless Vegetation

Highland treeless vegetation communities occur within the alpine zone where the growth of trees is impeded by climatic factors. Alpine vegetation is generally treeless, although there may be some widely scattered trees, generally less than two metres high. The altitude above which trees cannot survive in the north-east highlands of Tasmania can be as high as 1400m. Fire is, at present, the most serious threat to Highland treeless vegetation in Tasmania.

Moorland, sedgeland, rushland, and peatland

This group contains moorland, rushland, sedgeland and peatland predominantly on low-fertility substrates in high rainfall areas. Fire is a defining factor for the vegetation communities in this group, with both its intensity and frequency largely dictating the form of the vegetation.

Tasmanian buttongrass moorland is a unique vegetation type in a global context: it is the only extensive vegetation type dominated by hummock-forming tussock sedge *(G. sphaerocephalus)*. Buttongrass moorland is at the interface of terrestrial and wetland systems, with much of it seasonally waterlogged.

Native Grasslands

Native grasslands are defined as areas of native vegetation dominated by native grasses with few or no emergent woody species. Different types of native grassland can be found in a variety of habitats, including coastal fore-dunes, dry slopes and valley bottoms, rock plates and subalpine flats. The lowland temperate grassland types have been recognised as some of the most threatened vegetation communities in Australia.

Some areas of native grassland are human-induced and exist as a result of heavy burning, tree clearing or dieback of the tree layer in grassy woodlands.
There are seven grassland communities recognised by TASVEG: one is coastal, four are lowland, one is highland, and one is found in both highland and lowland areas. Floristic differences, altitudinal distribution and environmental situation are used to define the communities.

Non eucalypt forest and woodland

These forest and woodland communities are grouped together either because they are native forests and woodlands not dominated by eucalypt species or because they do not fit into other forest groups. If there is a functional attribute most share, it is the widespread initiation of even-aged stands by fire and the ability of many of them to form

closed–canopy forests. Some of these communities have been referred to as "dry rainforests".

Other natural environments:
This mapping unit includes land which is largely bare of vegetation such as sand, mud, water, or sea. Natural rocky areas such as scree slopes, boulders and exposed bedrock (and associated lichen species) are also included in this broad vegetation community type.

Rainforest and related scrub
Tasmanian rainforest is structurally and floristically variable and it is defined by the presence of species of any of the genera Nothofagus, Atherosperma, Eucryphia, Athrotaxis, Lagarostrobos, Phyllocladus or Diselma. Occasionally some understorey species, for example Anodopetalum biglandulosum or Richea pandanifolia, may occur as dominants (Jarman & Brown 1983). Much rainforest falls within the structural definition of closed-forest (Specht 1970) but some types, such as scrub rainforest and subalpine rainforests, do not fit this category.
Rainforest occurs from sea level to about 1 200 m. Tasmanian cool temperate rainforest has affinities with rainforests in south-east Australia, New Zealand and the Andean region of southern Chile and Argentina. One notable difference is that Tasmanian rainforest has a lower diversity of tree species.

Saltmarsh and Wetland
Wetlands are among the most productive ecosystems on earth, fulfilling many environmental and socio-economic functions. They act as breeding grounds for many species of fish, water birds, amphibians and insects. Many wetlands are important as stopover points for migratory bird species. Plant communities in wetlands filter water and disperse heavy flow in times of flood.
Saltmarshes are saline types of wetlands. They occur predominantly on low-energy coastlines where wave action does not hinder the establishment of vascular plants. In Tasmania the best examples can be seen in sheltered inlets and bays on the east and south coasts, with other large areas present in the far north-west of the State and on some of the Bass Strait islands.

Scrub, heathland and coastal complexes
Scrubs, heathlands and the diverse complexes that they may form are, with a few notable exceptions, dominated by scleromorphic species. The canopy structure of the woody plants in these communities varies from 30 to 100% solid crown cover and is usually 5 m or less in height. While this height is the arbitrary divide between forest (including woodland) and scrub (Specht 1970), taller vegetation is included in these mapping units when it maintains a dense scrubby structure and/or a floristic composition indistinguishable from communities typically 5 m or less in height.
Scrub and heathland communities typically have only two strata; a dominant layer of shrubs comprising one to many species; and a ground layer of herbs, orchids, prostrate shrubs, ferns and occasionally grasses and/or sedges. Some heath and scrub vegetation also includes emergent trees, but where present, these never form more than 5% solid crown cover.

Wet Sclerophyll Forest communities:
Wet sclerophyll forests are typically dominated by eucalypts and have an understorey dominated by broad-leaved (soft-leaved) shrubs. Trees in mature forest generally exceed 40 m in height. As with the related mixed forest, wet sclerophyll forests typically contain only one or two eucalypt age classes - these relate to period since fire or other major disturbance (including intensive logging and regeneration burning). Often only one

species of eucalypt is present. The shrub understorey is dominated by broad-leaved shrubs and is generally dense, preventing continuous regeneration of shade-intolerant species such as eucalypts. Ferns are often prominent in the ground layer.

Source:
1. Forest Practices Authority (2005). Forest Botany Manual. Forest Practices Authority, Tasmania:
2. Kitchener, A. and Harris, S. (2013). From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation. Edition 2. Department of Primary Industries, Parks, Water and Environment, Tasmania