



Tamar Fire Management Area

Fire Protection Plan

2018

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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.
Asset Zone	The geographic location of assets of high value or importance and the physical boundary immediately around the asset.
Asset Protection Zone	An area of high strategic importance to protect values in the asset zone. Regular fuel reduction should be undertaken in the vicinity of specific assets (up to 1km wide around the asset).
Strategic Fuel Reduction Zone	Area of management that will increase the likelihood of controlling a bushfire within or the forward spread through the area. Located strategically in fuel types of high or greater flammability. Fuel to be managed by prescribed burning. Between 1km and 6km from a human settlement area.
Land Management Zone	An area that is managed to meet the objectives of the relevant land manager, which can be planned fire for fuel reduction, biodiversity conservation or forest regeneration.
BRAM	Bushfire Risk Assessment Model – A computer based modelling tool that uses a series of inputs to assess the risk of bushfire to a specific area. The BRAM has a capacity to produce a series of outputs. It was developed and is managed by Tasmanian Parks & Wildlife Service (PWS).
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.
Community Bushfire Mitigation Plan	A strategic plan that focuses on addressing bushfire hazards, and improving the survivability of communities and assets. The Bushfire Mitigation Plan identifies key areas for fuel management, and provides tactical guidance regarding prescribed burning, fuel treatment, fire management infrastructure, and asset protection work.
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.
Community Bushfire Protection Plan	A bushfire plan for community members that provides local, community-specific information to assist with bushfire preparation and survival. The focus of the Bushfire Protection Plan is on

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

bushfire safety options, and the intent of the plan is to support the development of personal Bushfire Survival Plans.

Community Bushfire Response Plan	An Emergency Management Plan for emergency managers and responders. The Bushfire Response Plan aims to better protect communities and their assets during bushfire emergencies, through the identification of protection priorities and critical operational information. These plans make firefighting resources safer and more effective
Consequence	The outcome or impact of a bushfire event.
Fire Management Zoning	Classification system for the area to be managed. The zoning system indicates the primary fire management purposes for an area of land.
Human Settlement Area	Term given for the dataset used to define where people live and work. The dataset was developed for the purpose of risk modelling and was created using a combination of building locations, cadastral information and ABS data. Includes seasonally populated areas and industrial areas.
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.

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 & Policy
BRAM	Bushfire Risk Assessment Model
BRN	Bushfire Ready Neighbourhoods
CPP	Community Protection Plan
CRP	Community Response Plan
FIAT	Forest Industry Association Tasmania
FMAC	Fire Management Area Committee
FPP	Fire Protection Plan
FRU	Fuel Reduction Unit
HSA	Human Settlement Area
LGA	Local Government 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

Maps contained in this document may include data provided by DPIPWE (Information and Land Services Division (ILS), and Parks and Wildlife Service Fire Management Section), and Tasmania Fire Service. These map products have been produced by the Tasmania Fire Service. While all efforts have been taken to ensure the accuracy of these products, there may be errors and/or omissions in the data presented. Users of these products are advised to independently verify data for accuracy and completeness prior to use.

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 1 October 2014. The submission date was changed to the 31st of December for 2016 and beyond.

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 management of bushfire related risk is not the sole responsibility of any one land manager but is a collective responsibility of the whole community. All members within a community have a responsibility to assist with the management of bushfire risk.

The **aim** of this FPP is to document the cross tenure process of identifying and treating bushfire-related risk within the *Tamar* Fire Management Area.

The **objective** of this FPP is to effectively manage bushfire related risk within the *Tamar* Fire Management Area in order to protect people, assets and other things valuable to the community.

In the first instance, the main objective of fire protection plans is to identify risk and provide actions for the protection of communities at risk from bushfire. Risk based planning places the highest priority on protection of human life followed by protecting infrastructure and environmental values.

Specifically, the objectives of this plan are to:

- Guide and coordinate a tenure blind bushfire risk management program over a five (5) year 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.

1.3 Context

South eastern Australia, including Tasmania, is particularly prone to fire and is regarded as one of the most bushfire-affected regions in the world. It is neither possible nor desirable to eliminate bushfires in Tasmania. Whilst bushfires are part of the natural ecosystem processes of Tasmania and are essential for the maintenance of biodiversity, its affects can be catastrophic if uncontrolled. Tasmania has experienced periodic bushfire events that have caused devastating loss to life and property. In the aftermath of recent catastrophic bushfire events a heightened focus has been placed on bushfire risk identification and mitigation.

In recognition of the fact that bushfire is a landscape scale problem, the management of which is a shared responsibility across all levels of government and both the public and private arena, changes were made to the *Fire Service Act 1979* that align the administrative responsibility for the management of bushfire fuels across the State. The fire management area committee (FMAC) structure, membership and committee boundaries were reviewed and there are now 10 fire management areas for the State. This reflects a broader landscape approach and strategic focus that is required to effectively manage and mitigate the risk of bushfire.

The following organisations are represented on Fire Management Area Committees:

- Local Government Authorities
- Sustainable Timber Tasmania
- Tasmania Fire Service
- Tasmanian Parks and Wildlife Service
- Tasmanian Farmers and Graziers Association
- Tasnetworks
- Hydro Tasmania
- Forico
- TasWater
- Tasmanian Land Conservancy
- State Emergency Service
- Department of Defence
- State Fire Management Council

The principal aim of the FMAC's is to bring together the various stakeholders that manage land use across the State, to work together to effectively manage vegetation fuels for the mitigation of bushfires. The principle responsibility of a FMAC is to prepare a tenure blind fire protection plan for its Fire Management Area.

1.4 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 Report
- Municipal Emergency Management Plans
- State Bushfire Safety Policy

Standards

- AS/NZS ISO 31000:2009 - Risk Management – Principles and Guidelines
- National Emergency Risk Assessment Guidelines (NERAG)

Legislation

- *Aboriginal Relics Act 1975*
- *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* and *Tasmanian Forests Agreement Act 2013*
- *Threatened Species Protection Act 1995*
- *Environmental Management and Pollution Control Act 1994*
- *Local Government Act 1993*
- *Forest Practices Act 1985* and *Forest Practices Code 2015*
- *Tasmanian Electricity Code*
- *Weed Management Act 1999*

Chapter 2 Establishing the Context

2.1 Description of the TAMAR Fire Protection Plan Area

2.1.1 Location and boundaries

The Tamar Fire Management Area plan covers a total area of 859,086 ha.

The Tamar Fire Management Area is located in the north of Tasmania and encompasses Launceston City and the Tamar River estuary. Greater Launceston accommodates the largest urban population in Tasmania outside of Hobart, with a population over 106,000. Launceston is the major retail centre for the area and a major service centre for the north of Tasmania.

The surrounding area has a minor mineral and manufacturing base but the region is dominated by agricultural and pastoral activities, particularly meat production, apples, berries and viticulture, with the Tamar Valley being one of Tasmania's leading wine producing areas. Wool growing and tourism are also important industries for the region.

The Tamar Fire Management Area straddles the Midland Highway which is the primary road route to and from Hobart in the south. It also straddles the Bass Highway between Launceston and Westbury.

The character of land surrounding the greater Launceston urban area can be described as land with high environmental values or land with high agricultural value.

Central to the Tamar Valley Fire Management Area is the Tamar River and Esk River system, which links the region to Bass Strait.

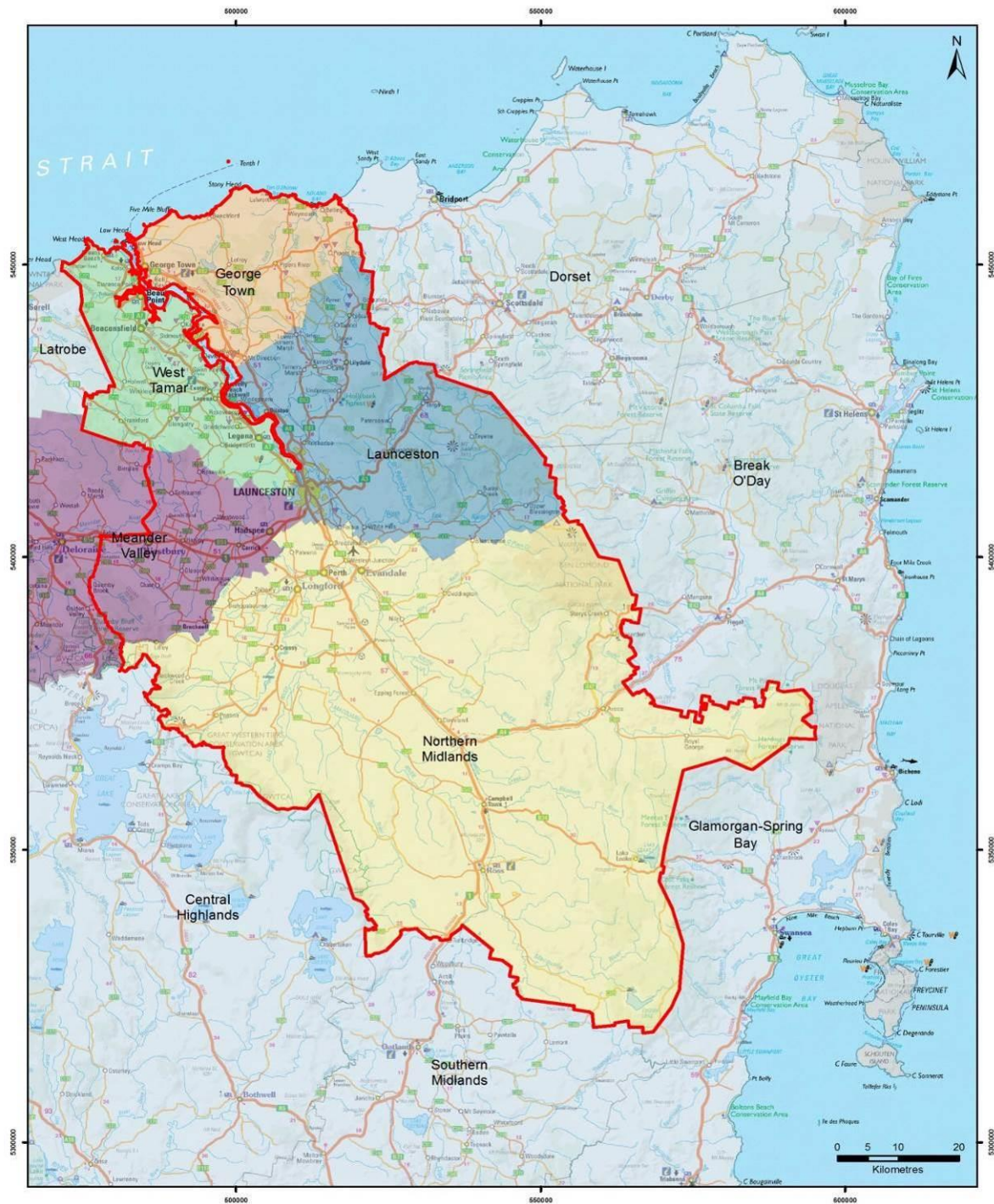
The topography of greater Launceston, a combination of steep (originally heavily wooded) ridges and low-lying areas has resulted in areas of Launceston being subject to landslip problems, while other locations are liable to poor drainage and periodic flooding.

A map of the Tamar Fire Management Area is contained in Appendix 1.

There are five local government areas wholly or partially covered by this plan including:

- George Town Council
- West Tamar Council
- City of Launceston
- Meander Valley Council
- Northern Midlands Council

Figure 1: Local government areas – Tamar FMA



2.1.2 Population and Demographics

The Tamar Fire Management Area has an estimated residential population of 128,000 (of that, 106,000 people live in Launceston).

There are a number of larger population centres within the Tamar Fire Management Area outside of Launceston including;

- Beaconsfield/Beauty Point (population 3727)
- George Town (population 4304)
- Hadspen (population 2063)
- Legana (population 6680)
- Longford (population 3053)
- Perth (population 2411)
- Westbury (population 2104)

A map showing the population distribution of the Tamar Fire Management Area is contained in **Appendix 2**.

In the next 12 months the following areas will be subject again to significant residential growth at the interface between urban and rural areas:

- Legana - currently the fastest growing town in Tasmania with West Tamar Council predicting the number of residents will double again by 2036.
- Riverside – Riverside continues to grow west toward the Bridgenorth Ridge line and rural areas. This growth will be incremental but it does highlight the importance of managing the Bridgenorth area in coming years.

Rural living and smaller dispersed settlements represent another element of population dispersal within the area. This is especially evident along the Tamar River and estuary. Farm properties and small rural living enclaves are common development types in the rural and regional areas.

Key industries in the area providing employment include agriculture, forestry and fishing, manufacturing, retail trade and health care and social assistance.

Significant built infrastructure assets in the region include;

- Bell Bay Industrial Precinct
- Launceston Airport
- Rail infrastructure
- Bass and Midlands Highway
- East Tamar Highway
- TasWater and TasNetworks infrastructure
- Telecommunications infrastructure (radio and telephone towers, TV transmitters etc.)

2.1.3 Land Tenure

Within the Tamar Fire Management Area approximately 25% of land is public land and 75% is private/freehold land.

A map showing land tenure within the FMA, together with a table containing a breakdown of land tenure in the Tamar Fire Management Area is contained in **Appendix 3**.

An overview of the land tenure within the Tamar FMA is contained in table 1.

Tenure	% of land
Private	75%
STT	9.0%
Parks and Wildlife Service	12.3%
Crown	3.5%

Table 1 - Overview of tenure within the Fire management Area

The management of fire risk on private land is a particular challenge for the Tamar FMA.

Land tenure is important when considering how to manage bushfire risk on a landscape scale. Government agencies responsible for management of the State's public land generally have arrangements in place for mitigating bushfire risk together with the resources and necessary skills for planning for and responding to bushfire emergencies. Many private property land owners do not have the resources, skills, knowledge or experience to safely and effectively manage fire risk on their land. Further compounding the complex issue of managing fire risk on private land is the fact that it is not co-ordinated or carried out in a strategic manner.

2.2 Tenure-blind fire management

Recent bushfire events across south eastern Australia have shown the importance of strategic fuel management regardless of land tenure. The fact that bushfires move through the landscape with no regard to property boundaries or tenure means that cooperation is needed between land management agencies and private property owners and occupiers in order to adequately address the threat of bushfires in Tasmania.

Over time the focus of fire management activities has largely ended up with government agencies managing public land. It is evident from the large percentage of private or freehold land within the fire management area that focusing mitigation efforts on public land alone will not be effective in addressing the risk of bushfires. Managing the risks associated with bushfires will necessitate improving community understanding and acceptance of the need to use prescribed burning (together with a range of other treatment options) appropriately on private as well as public lands.

2.3 Management of fire risk on private property

Under the *Fire Service Act 1979* private landowners/occupiers in Tasmania, have a number of legal responsibilities in relation to fire management, including undertaking fire maintenance activities to ensure fuels on their property do not pose a risk to neighbouring properties.

Privately owned land represents a considerable challenge to the effective management of fire because there are currently some major barriers that limit the extent to which landholders undertake planned burns. These include:

- the risk of fire escapes. Privately owned land tends to be where the highest value risk (human lives) are concentrated;
- potential liability of property owners from fire escapes;
- poor access to good weather/local forecast information;
- lack of fire management knowledge, skills and experience;
- lack of labour to manage the burn;
- lack of appropriate equipment to safely manage the burn;
- absentee land owners - many properties now have owners but not occupiers, for example hobby farms and holiday season shack communities.

Other Tasmania-wide issues:

- De-stocking of rural areas - land where fuels were once managed by grazing or occasional burning are left fallow and weeds or native vegetation fuels accumulate.
- Over time, fire preparedness and damage mitigation has given way to a suppression-oriented approach. Communities have become reliant on fire management agencies suppressing fire however suppression is unlikely in extreme bushfire events.
- There is an inconsistent approach amongst local Councils in relation to enforcing fire abatement notices and provisions on private property.
- There appears to be some concern and confusion in the community about a range of fire related legal issues including vegetation clearing laws, fire permit requirements, backyard burning restrictions and threatened species permit requirements.
- Population mobility and ageing. The number of people choosing to live in bush-fire prone areas is increasing. As the population moves in and out of rural areas the knowledge and awareness of people living in bush-fire prone areas diminishes.
- Land use planning issues – in some areas residential development continues to be permitted in locations with potentially extreme fire risk.

2.4 Climate and Bushfire Season

The climate of the Tamar Fire Management Area is classified as temperate and is characterised by wet winters and low summer rainfall. Launceston's weather patterns can change considerably in a short period of time.

Weather Observations

There are six Bureau of Meteorology (BOM) weather observation stations located within the Tamar Fire Management Area from which weather data are collected on a regular basis. They are located at:

- Low Head in the north of the Fire Management Area;
- Launceston;
- Launceston Airport;
- Cressy;
- Ross in south of the Fire Management Area;
- Lake Leake in the east of the Fire Management Area.



Summary Climate Statistics – Tamar FMA

<i>Mean Annual rainfall</i>	Across the Tamar Fire Management Area mean annual rainfall varies from 498mm/yr at Ross to 830mm/yr at Lake Leake. 610mm (Cressy), 677mm (Low head) and 680mm (Launceston – Ti Tree Bend)
<i>Wettest months</i>	Winter (July and August)
<i>Driest Months</i>	February & March
<i>Windiest Months</i>	Spring and summer
<i>Months of least wind</i>	June/July (winter)
<i>Cloudiest Month</i>	May at Low Head and July in Launceston

Temperature and rainfall

Within the fire management area terrain and distance from the coast have a strong influence on rainfall patterns with higher rainfall on hilly, coastal areas. Minimum and maximum temperatures are also cooler and warmer (respectively) with distance from the coast with inland areas experiencing higher daily temperatures in summer. The more rugged highland areas can be subject to frequent snowfalls in spring.

Winter is the wettest season due to the influence of passing cold frontal systems on the area.

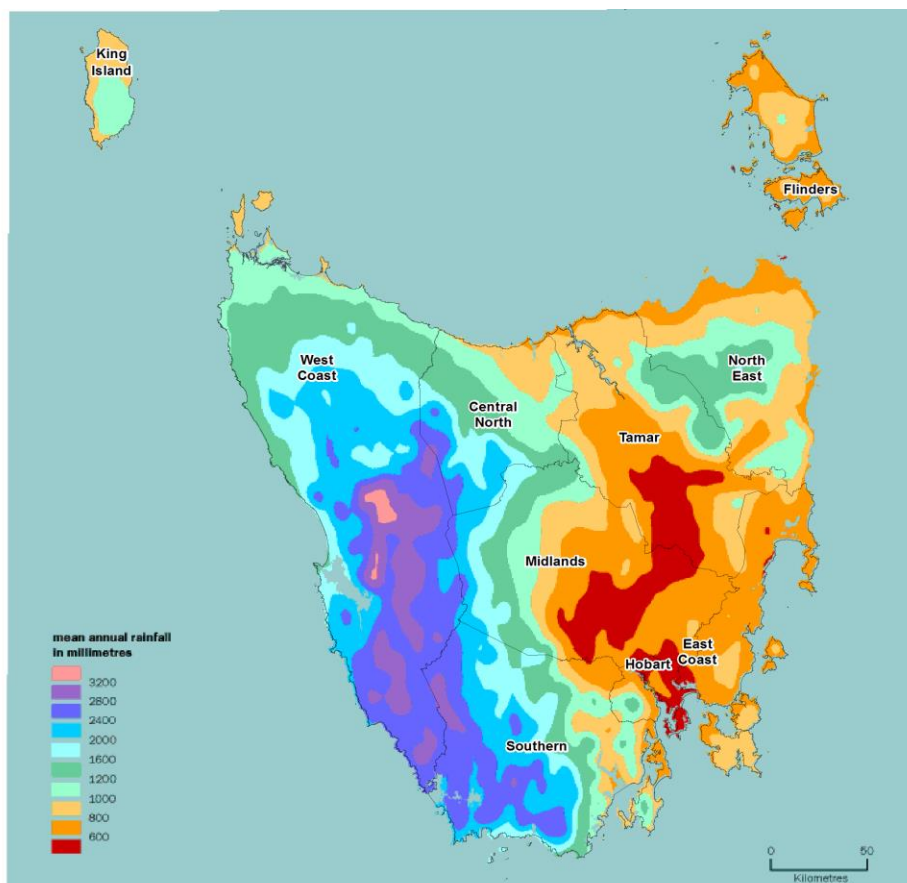


Figure 2: Mean annual rainfall across Tasmanian Fire Management Areas.

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

Wind

The prevailing winds for the area are westerly. Spring is the windiest season with winds from the northwest increasing in the afternoons. Winter is the season of least wind and this together with the topographical effect of the Tamar Valley can result in frequent foggy mornings around the Launceston area.

Bushfire season

A fire season is defined as the period of time in which fires are most likely to occur. Fire seasons can vary geographically and temporally. The fire season in the northern region of Tasmania extends from August to April. The bushfire threat for the Tamar FMA increases in November, with a peak in January although extreme fire danger days often prevail in the latter part of summer.

Thunderstorms and associated lightning activity are also more frequent within the area in summer. The Tamar Fire Management Area has an average of between 5 and 10 thunder days annually with the northern part of the FMA recording a slightly higher number of thunder days than the south.

2.5 Vegetation

The Tamar FMA consists of a range of vegetation types. The landscape within a large portion of the FMA has been highly modified for agriculture resulting in the dominant vegetation type consisting of non-native agricultural, urban and exotic vegetation. The second most common vegetation type within the FMA consists of highly flammable dry eucalypt forest and woodland.

The main vegetation associations in Tasmania have been mapped by the TasVeg mapping program. For the purposes of fire management, the complex vegetation associations used in TasVeg have been simplified into 21 types and fire-attributes (fire sensitivity and flammability ratings) have been developed for each type.

The broad native vegetation types and native forest communities occurring within the planning area include:

- Native grassland
- Native non-forest vegetation (e.g. moorland, sedgeland, heath, rushland and peatland)
- Highland and Treeless Vegetation
- Swamp forest
- Saltmarsh and wetland
- Wet sclerophyll forest and woodland;
- Dry sclerophyll forest and woodland;
- Scrub communities (scrub, heathland and coastal complexes)
- Other natural environments

Non native vegetation types occurring within the planning area include:

- agricultural, urban and exotic vegetation.

Broad Vegetation Group (TasVeg 3, 2013)	(ha)	% in FMA	Veg Flammability
Agricultural, urban and exotic vegetation	374576	43.6	Medium
Dry eucalypt forest and woodland	340014	39.6	Medium - High
Highland and Treeless Vegetation	6684	0.8	High
Moorland, sedgeland, rushland and peatland	466	0.1	Low – Very High
Native grassland	42879	5.0	High
Non eucalypt forest and woodland	14899	1.7	High
Other natural environments	11761	1.4	N/A
Rainforest and related scrub	4655	0.5	Low
Saltmarsh and wetland	1758	0.2	Low
Scrub, heathland and coastal complexes	13615	1.6	High – very high
Wet eucalypt forest and woodland	4733	5.5	Medium
Total	816040	100	

A map and description of each of the broad vegetation community types contained in the TASVEG mapping dataset and found in the Tamar FMA is contained in Appendix 4.

2.6 Bushfire Frequency and Causes of Ignition

Fire frequency is defined as the total number of fires that occurred over a period of time. Fire frequency records for the Tamar Fire Management Area have been obtained from records provided by the Tasmania Fire Service, Parks and Wildlife Service and STT but the records are incomplete. Data for fires on private property is particularly lacking. Records that are available indicate that in the years since records started being kept more than 250 fires (including planned burns) have occurred in what is now the Tamar FMAC area.

The vast majority (94%) of the fire management area has been untouched by fire since fire frequency records started being kept. 5.4% of the Fire Management Area is noted as having been subject to fire at least once. Less than 4% of the fire management area has been subject to more than 2 or 3 fires at the same location.

Major Fire events within the Tamar FMA

Fire name	Year	Area Burnt (ha)
Nunamara (Tasman Highway)	2016 (Jan)	871
Connorville Road	2016 (Jan)	808
Lefroy	2015 (Mar)	1060
Back Creek Road	2012 (Nov)	3327
Asbestos Road York Town	2010 (Jan)	2905
Tippogoree Hills	2006 (Nov)	4098
Beechford	2003 (Feb)	4160

Fire Ignition Cause

The true causes of fire, either through ignition by lightning or caused by human actions have not been well documented. TFS does not keep records relating to fire ignition causes and the causes of fire have only been documented by Tasmanian Parks and Wildlife and STT since the 1980s.

Of the most recent fire records available for the Tamar Fire Management Area, the ignition cause for the majority of fires was classed as unknown (42%). The next leading causes for fire ignition are listed as escaped (23%), planned burning (18%) and arson (16%).

Analysis of the records that exist indicate that the principle causes of ignition within the FMA are:

Ignition source	% of ignitions
Unknown cause	30%
Escapes from planned burns	14%
Planned burns	36%
Arson	12%
Lightning	1%
Accident, bushfire spotting, campfire (combined)	4%

Maps showing fire history, and causes of ignition for the Tamar Fire Management Area are contained in **Appendix 5**.

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 November 2013 was used to analyse the landscape level risk for this plan. For a full analysis of the model, see Appendix 6.

To determine overall risk the NERAG (National Emergency Risk Assessment Guidelines August 2010) document (see Appendix 7) was used. The level of risk is determined by combining consequences and likelihood (see Appendix 6).

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 state-wide 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 of the BRAM.

While the values layer within the model identifies a wide range of values in the Tamar FMA (including critical infrastructure), agricultural land including vegetable and seed crops, irrigated and dry land pastures, orchards and vineyards and their economic significance are largely not part of the analysis. Damage to these pastures and crops from fire in the Tamar FMA could have a major impact on the economy of the area.

Agricultural values of particular significance to Tamar FMA:

- seed crops such as cereals, pulses, oil seed and small seeds (i.e. pasture and vegetable seed crops) become flammable as they ripen, and the closer to harvest the worse the fire danger becomes.
- orchards and vineyards although not normally regarded as flammable, can be severely damaged if the weather and fire are sufficiently hot. They can be considered high risk due to the time and investment required to establish an orchard or vineyard to production stage and subsequently the time required to re-establish following destruction or damaging fire events.
- vineyards can be subject to smoke taint which seriously de-values wine and can render it unsaleable.
- Poppy crops grown by Tas Alkaloids and Glaxo Smith Kline for the pharmaceutical industry

Other values that need to be understood when examining risk include the critical infrastructure present.

Critical infrastructure within the Tamar FMA includes:

- Launceston Airport
- Bell Bay Aluminium plant
- Major hazard facility at Westbury (BOC Liquid Natural Gas Plant)
- Tamar Valley Power Station
- Poatina power station headworks
- Beaconsfield Gold Mine

3.4 Overall Risk

A representation of risk (see Appendix 6) is developed when you combine the factors of likelihood and consequence. The BRAM 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 Tamar Fire Management Area

The bushfire risk model BRAM was utilised to examine risk across the fire management area. The results of this risk analysis are contained in a series of maps (BRAM - Bushfire Risk Assessment Model Maps) showing likelihood of ignition, consequences and overall risk within the Tamar FMA in Appendix 8. The BRAM overall risk analysis results for the Tamar FMA are shown overleaf in Figure 3.

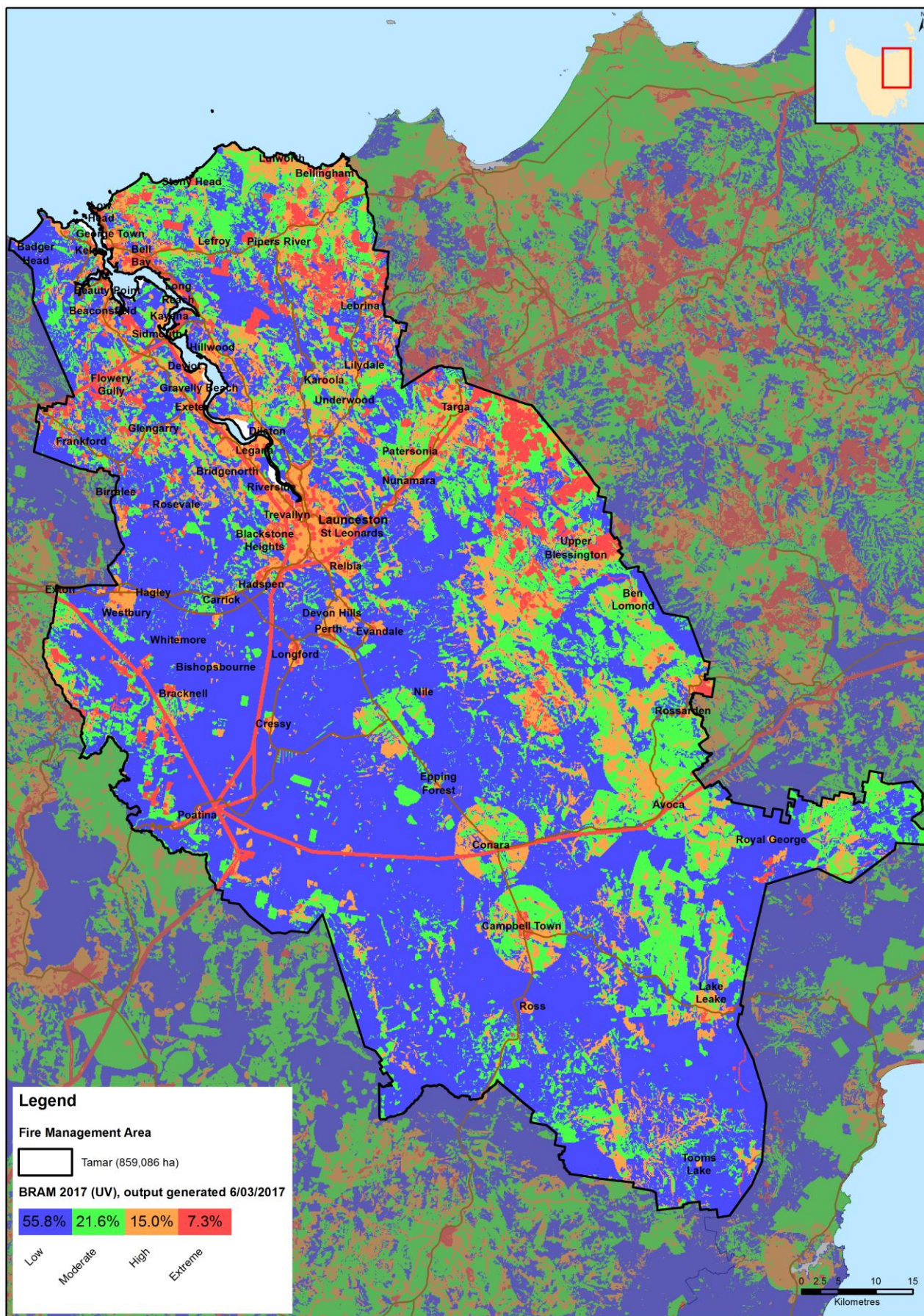
BRAM modelling results indicate that areas of highest bushfire risk identified for the Tamar FMA are located in the central northern part of the FMA (the populated suburbs of Launceston) and in the north eastern part of the FMA (north and north east of Burns Creek), with scattered patches of high risk throughout the FMA.

A total of 7.3% of the fire management area was identified as being at extreme risk from fire under current fuel loads.

BRAM Bushfire Risk Assessment results for Tamar Fire Management Area:

BRAM level of Risk	Area (ha)	% of FMA
Low	477651	55.6%
Moderate	185562	21.6%
High	128862	15.0%
Extreme	62713	7.3%

Figure 3 – BRAM Overall Risk analysis results – Tamar FMA



3.6 Phoenix Ignition Points Modelling

In addition to BRAM modelling, Phoenix Rapidfire, a bushfire simulator, developed by the University of Melbourne (Kevin Tolhurst and Derek Chong, 2008) was used to model the risk of fires impacting on communities present in the FMA. An understanding of the location of potential ignition points that may impact on communities is crucial. This modelling was done as part of the state wide strategic fuel management assessment. The process involved modelling potential ignition points, incorporating worst case scenario weather patterns and examining fire behaviour based on current fuel loads to identify the potential impact on human settlement areas.

The Phoenix modelling indicates that within the Tamar FMA ignition points of potential concern (and possibly requiring risk mitigation activities) are located:

- In the vicinity of Hagley and Quamby Bend (north east of Westbury)
- North west of Lilydale
- North west of Launceston - west of the Tamar River
- Along the Midlands Highway from Launceston to Campbell Town
- North west of Lake Leake and Rawlinna
- North west of Tunbridge

The Phoenix modelling was redone as part of the 2018 review of this plan. The results were very similar and the above areas are still of potential concern with the following new areas added:

- North west of Nunamara
- North west of George Town and Bell Bay
- North of Bridport Rd in the Lefroy/Pipers River area
- North of Launceston - east of the Tamar River
- North west of Poatina
- North west of Cressy

It must be understood that such analysis has many limitations but does provide an indication of where communities may be under risk as well as identify areas where strategic burning will assist in changing fire behaviour.

A map showing the location of potential ignition points that may impact on communities in the Tamar FMA under current fuel loads is contained in Appendix 9.

3.7 Community Risk Assessment

Strategic assessment tools (including BRAM and Phoenix computer modelling) have been used to conduct a broad scale assessment across the *Tamar* Fire Management Area to identify communities vulnerable to bushfire. A more detailed assessment using more locally specific processes was then conducted by members of the FMAC.

Tools that were used by the FMAC to identify communities vulnerable to bushfire include:

- Consultation of Council and Emergency Services Risk Registers
- Local knowledge from Tas Fire Service District Officers and Brigades
- BRAM Risk rating for Tamar FMA Human Settlement Areas
- Phoenix modelled impacts
- Consultation with Tasmania Fire Service Community Protection Planners and Community Development Officers
- Expert opinion of fire practitioners
- Identification and consideration of existing and past fire management actions, plans and incidents

Communities nominated by the Tasmania Fire Service District Officer for the area included:

- Poatina
- Rossarden
- Blessington
- Lake Leake
- Avoca through to Fingal (in the North East FMA)

Consideration was also given to other assets of particular significance to the Tamar FMA:

- Agriculturally valuable locations/crops (including carbon sequestration forests i.e. Millers Bluff)
- Community assets (Historic buildings, Surf Life Saving club, community halls etc.)
- Ecologically special areas
- Major infrastructure
- Large employment centres

Other communities nominated by the FMAC during 2015 included:

- Tooms Lake – BRAM modelling has shown this area to be of low to moderate risk with the likelihood of fire to be unlikely. However the community is relatively isolated with one access road and continuous forest and woodland in all directions, therefore the committee felt that this community should be included in the plan for future consideration.

- The coastal area including Beechford, Lefroy, Stony Head, Lulworth, Weymouth and Bellingham was raised as an area of concern by the FMAC. There have been 4 significant bushfires in this area in the last 10 years. Community Bushfire Protection Plans are currently in place for Weymouth (including Tam O Shanter and Lulworth) and Bellingham while a plan is proposed for Beechford and Lefroy in the next 12 months. This area will now be considered for future mitigation planning.

Following group analysis and discussion of the preliminary risk assessment results (detailed above), together with input gathered from local knowledge, 'at risk' communities were then prioritised by members of the Tamar Fire Management Committee in terms of requiring mitigation actions.

Other communities nominated by the FMAC during 2016 included:

- Bracknell/Liffey area. This area contains one Human Settlement Area, Bracknell. Blackwood Creek to the south could also be impacted by a fire in this area. Whilst there are many dwellings in the Liffey area they are not sufficiently grouped enough to be considered a Human Settlement Area. Overall BRAM for the area is low to moderate, with smaller areas of high to extreme (including the large transmission line corridor west of Bracknell, communications towers and forestry areas). The likelihood of fire is mostly unlikely in vegetated areas and likely in more developed areas while suppression capability is moderate to rapid. Within the most vegetated area, the Cluan Tiers and surrounds, the majority of the vegetation, especially south facing, is mapped as untreatable, generally wet forest or similar, therefore it is not an area that would typically be subject to a planned burn. This area will now be considered as a medium priority area in the Tamar FMA.
- Norwich Drive, Pateena Road area. This area scores generally low to moderate in the BRAM risk model. Likelihood of fire is mostly unlikely in vegetated areas and likely in more developed areas while suppression capability is immediate to rapid. Considering that we are currently undertaking burning in the Travellers Rest area and further mitigation planning is proposed for Hadspen and Blackstone Heights in 2017/18 then this was not added as a priority area.
- Lake View Road (Kalangadoo). Further analysis showed that this area is already covered as part of the Lake Leake high priority area with further mitigation planning proposed for 2017/18.

The results of the strategic assessment for the *Tamar* Fire Management Area are outlined below in Table 2.

Suburb Name	BRAM Rating	FMAC rating	priority
Nunamara	High	High	
Lake Leake	High	High	
Rossarden	High-Extreme	Medium	
Greens Beach	High	Med	
Beaconsfield	High	Med	
Travellers Rest	High	Low	

Table 2 – Results of the Strategic Assessment

A map showing the location of communities identified as a result of the strategic assessment process is contained in Figure 4.

Communities with Bushfire plans in place

A number of communities within the FMA have previously been identified as being at high risk and already have specific (TFS developed) Community Bushfire Response and Protection Plans in place. An explanation of each type of plan, together with a summary of the communities with plans already in place is contained in Appendix 10.

For the 2017/18 and 2018/19 fire season:

Community Bushfire Protection Plans and Community Bushfire Response Plans are proposed for:

- Greens Beach (2017/18)
- Beaconsfield (2018/19)
- Lilydale (Review) (2018/19)

Round 2 of the Bushfire Ready Neighbourhood Programs for the Tamar FMA will include the following localities:

- Rowella/Sidmouth/Kayena
- Kelso/Greens beach
- Bellingham

Vulnerable Groups

Consideration was also given to a number of community groups and locations within the FMA (including camping areas surrounded by flammable vegetation) that may contain people at risk from bushfire. The following groups and locations were considered due to their isolation, close proximity to heavily vegetated areas or low mobility:

- Recreational users at Hollybank Tree Tops Adventures
- Scout camp at Storys Creek (Rossarden area)
- Beaconsfield District health Service (nursing home)

The level of preparedness of residents and campers in these areas to respond to a bushfire event is not known. These groups and locations are likely to already have been given consideration in Local Council Emergency Plans and associated risk assessments.

Figure 4 – Areas Identified in FPPs for Mitigation Activities

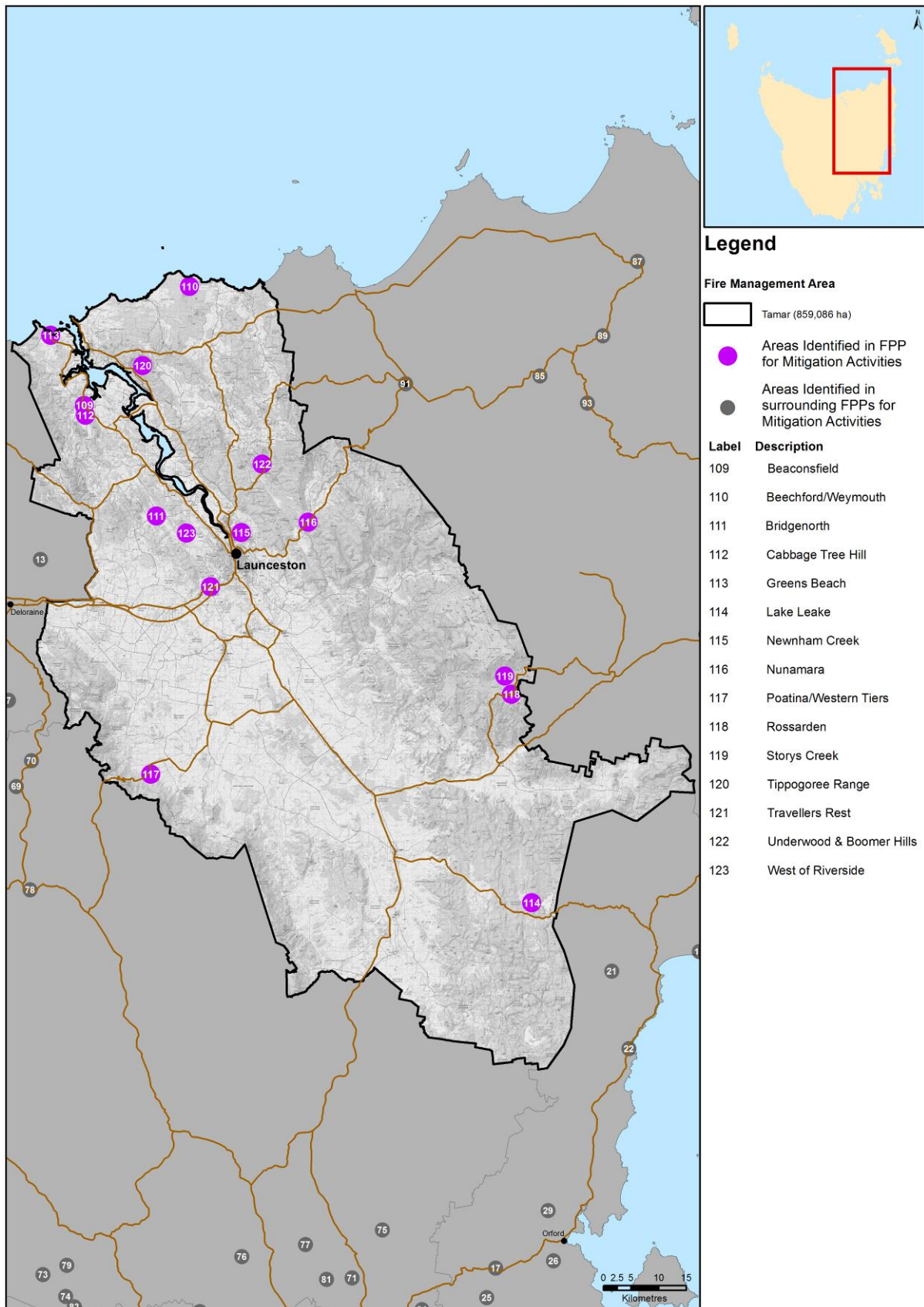
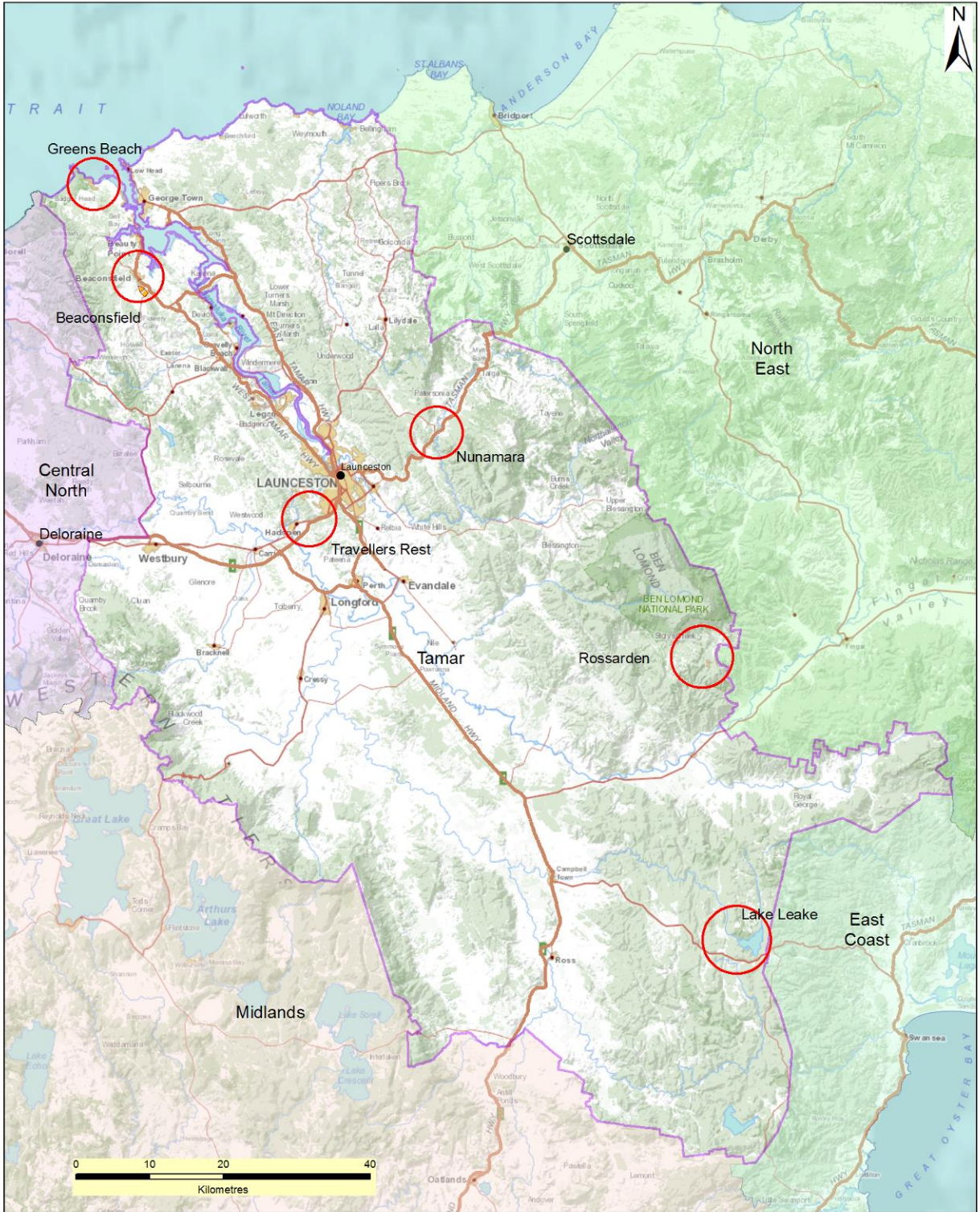


Figure 5 – Communities identified during strategic assessment process - Tamar FMA



<p>Overview Map</p>	<h2>Communities identified in strategic assessment process Tamar FMAC</h2>	<p>State Fire Management Council</p> <p>Map Title: TEMPLATE Datum: ODA 1984 Author: megl Projection: Transverse Mercator Print Date: 26/09/2014 Coordinate System: ODA 1984 MGA Zone 55 Print Time: 08:37:24</p> <p>Scale: 1:470,821 1 centimetre = 4,708 metres (A3)</p> <p>Source: Tasmanian Fire Service Authority (TFS) Data: Tasmanian Fire Service Authority (TFS)</p> <p>© State Fire Management Council 2014. All rights reserved. This map is for informational purposes only. It does not constitute a warranty or guarantee of any kind. The State Fire Management Council is not responsible for any loss or damage arising from the use of this map.</p>
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3.8 Areas of strategic importance within the Tamar FMA

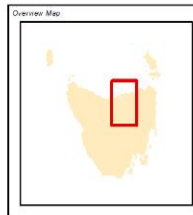
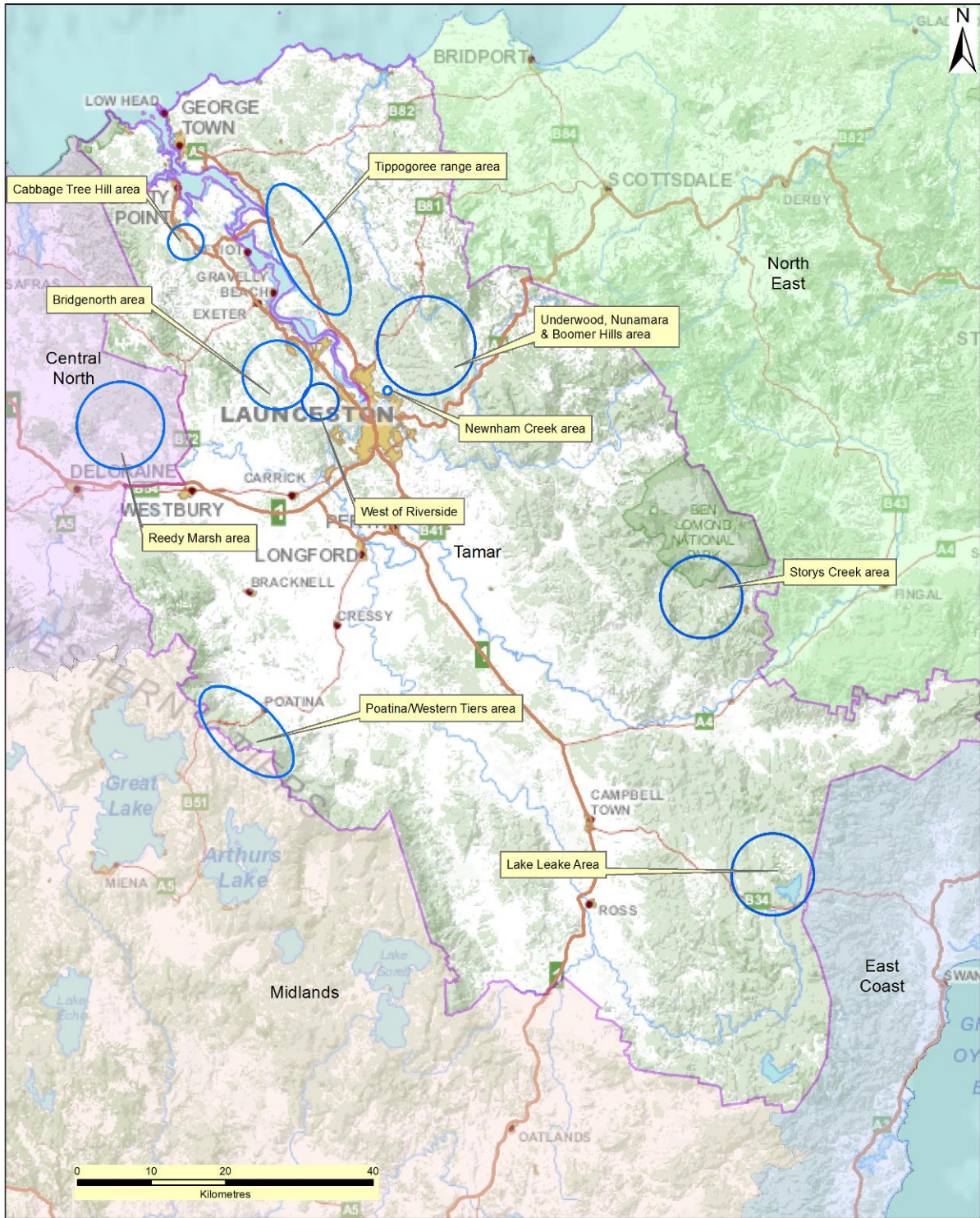
In addition to the above communities, areas of potential strategic importance were also identified, shown in Table 3. These areas were identified through a process that utilised and combined local knowledge, BRAM risk assessment and phoenix ignition potential modelling. FMA members with specific fire expertise and knowledge across the area contributed to the identification of both the communities at risk and the broader strategic areas for potential actions.

Table 3: Strategic areas for potential treatment in the Tamar FMA.

Potential treatment area	May provide protection for
Tippogoree range ⁱ (range on the eastern side of the Tamar River)	North eastern suburbs of Launceston
Underwood, Nunamara & Boomer Hills	Nunamara
Newnham Creek area	Ravenswood, Mayfield
Cabbage Tree Hill (west Beaconsfield)	Beaconsfield
Bridgenorth Area	Riverside, Blackstone Heights, Travellers Rest
West of Riverside	North western suburbs of Launceston
Storys Creek/South of Ben Lomond National Park	Rossarden
Reedy Marsh (located in Central North FMA but will impact on Tamar FMA)	Westbury
Lake Leake	Cutting Grass Bay and Kalangadoo

A map showing the general location of potential fuel management units of strategic value within the Tamar FMA is contained in Figure 5.

Figure 6 – Areas of potential strategic importance - Tamar FMA



General locality of
 areas of potential strategic value
 for mitigation actions
 Tamar FMAC

State Fire Management Council	
Map title: TEMPLAIE	Datum: GDA 1991
Author: msp	Projection: Transverse Mercator
Print Date: 26/09/2014	Coordinate System: GDA 1984 MGA Zone 55
Print Time: 09:31:46	
Scale: 1:476,021	1 centimetre = 4,768 metres (AS)
<small> Data from: ESRI, Bentley Systems, Autodesk, etc. All rights reserved. All other marks are the property of their respective owners. This map may not be used for any purpose other than that for which it was prepared. The State Fire Management Council is not responsible for any errors or omissions in this map or for any consequences arising from its use. Copyright © 2014 State Fire Management Council </small>	

3.9 Strategic Fuel Management

Reducing fuel loads in strategic areas (usually through prescribed burning) is undertaken with the intention of modifying the fire behaviour of any future bushfire and creating an improved window of opportunity to control or contain bushfire events. The basic strategy is to develop a mosaic of fuel reduced areas within specific parts of the landscape over a time frame of several years. The application of a burning regime that establishes a mosaic of burns can be used to ensure bushfire impacts are minimised. It also ensures fire dependent flora species are maintained. Appropriate techniques may include but are not restricted to such processes as fuel reduction burning, slashing, trittering, mulching and fire break and trail construction.

Strategic Fire Trails

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

- Adjacent to the assets which they are required to protect;
- Lead to strategic water sources;
- Break up large tracts of contiguous flammable vegetation;
- to facilitate access and egress to assets;
- To provide boundaries for prescribed burning blocks.

The identification of strategic fire trails, fire breaks, roads and fire infrastructure within the Tamar FMA has not yet been undertaken but has been identified as a high priority for future Fire Protection Plans.

Chapter 4 Bushfire Risk Treatment

4.1 Region Wide Controls

The following controls are currently in place across the Tamar Fire Management Area 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 Community Fire Safety Programs and SFMC state-wide programs tailored to suit local needs; eg Community Education – Bushfire Ready Neighbourhoods Program, Bushfire Planning and Policy – Community Protection Planning and private land burning programs (see Appendix 10 for further details).
- 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 Treatment Options - Planned burning

Strategic fuel reduction burning is one treatment option with the potential to reduce risk to some communities throughout the FMA.

In Tasmania, only certain types of vegetation are suitable for planned burning, for example dry eucalypt forest, scrub, heathland and button grass. These are what can be called 'treatable' vegetation types. Other vegetation types are unsuitable for planned burning either because they are too wet to burn (such as sphagnum, swamp and wetland), are extremely fire sensitive (rainforest, alpine/sub alpine coniferous heathland) or have other characteristics such as land which is unvegetated or vegetation growing in urban areas which make them unsuitable for planned burning. These unsuitable vegetation types are considered 'non-treatable' for planned burning purposes.

Agricultural lands, whilst susceptible to the impact of bushfire, are also considered 'non-treatable' due to the land use priority for these vegetation types. This does not preclude these areas from burning however it means this area of land use type is not being included in the analysis of treatable and untreatable vegetation.

Approximately 41% of the area of Tasmania (or 2,760,222 ha) is covered by vegetation types suitable for planned burning.

Within the Tamar Fire Planning Area a total of 428,356 ha (or 50% of the total area) has been categorised as Treatable (by planned burning). The remaining 49% of the fire planning area (423,195 ha) has been classified as untreatable.

Fuel Reduction Burning Treatability – Tamar Fire Management Area		
	Tamar Area (ha)	(%)
Treatable	428356	49.9
Un-treatable	130608	15.2
Agricultural Land*	292587	34.1
Water	7041	0.8
<i>Not Mapped</i>	495	0.1
		100.0
Total FMAC Area (ha)	859086	

* Classified in TASVEG2 as 'FAG' (agricultural landscapes where there are crops, pasture or orchards)

Maps and a summary table showing treatability of land within the Tamar FMA are contained in Appendix 11.

4.4 Treatment options other than burning

In areas classified as untreatable by planned burning the risk of fire may still be mitigated through a range of other activities including:

- Mechanical fuel removal (slashing and mulching, mowing, trittering, poison spraying)
- Fire trail maintenance and construction of strategic fire breaks (grading/dozing)
- Intensive or 'crash' grazing of blocks by livestock including goats
- Weed control
- The creation of fuel modified zones (fuel reduced zones) around structures and assets
- Planning conditions and restrictions in areas adjoining heavily vegetated land
- Bushfire resistant building design and construction materials for new developments
- Individual property owners can undertake bushfire readiness preparation prior to each fire season (including the development of Bushfire Survival Plans)
- The Tasmania Fire Service can prepare community specific plans including Community Bushfire Response Plans (for use by emergency response agencies) and Community Bushfire Protection Plans (for use by community members).

4.5 Bushfire Risk Mitigation programs – other agencies

A number of land management agencies including Parks and Wildlife Service Tasmania, STT, local Councils and private enterprises such as Forico have annual planned burning programs, including joint tenure burns and operations.

A map showing the location of planned burning operations for 2015/16 on agency managed land within the FMA is provided in figure 7.

Many other planned burns have not been captured in the current Fire Protection Plan process. Landscape-scale based fire planning and management will become more effective when all of these planned burns are documented and mapped for use in future Fire Protection Plans.

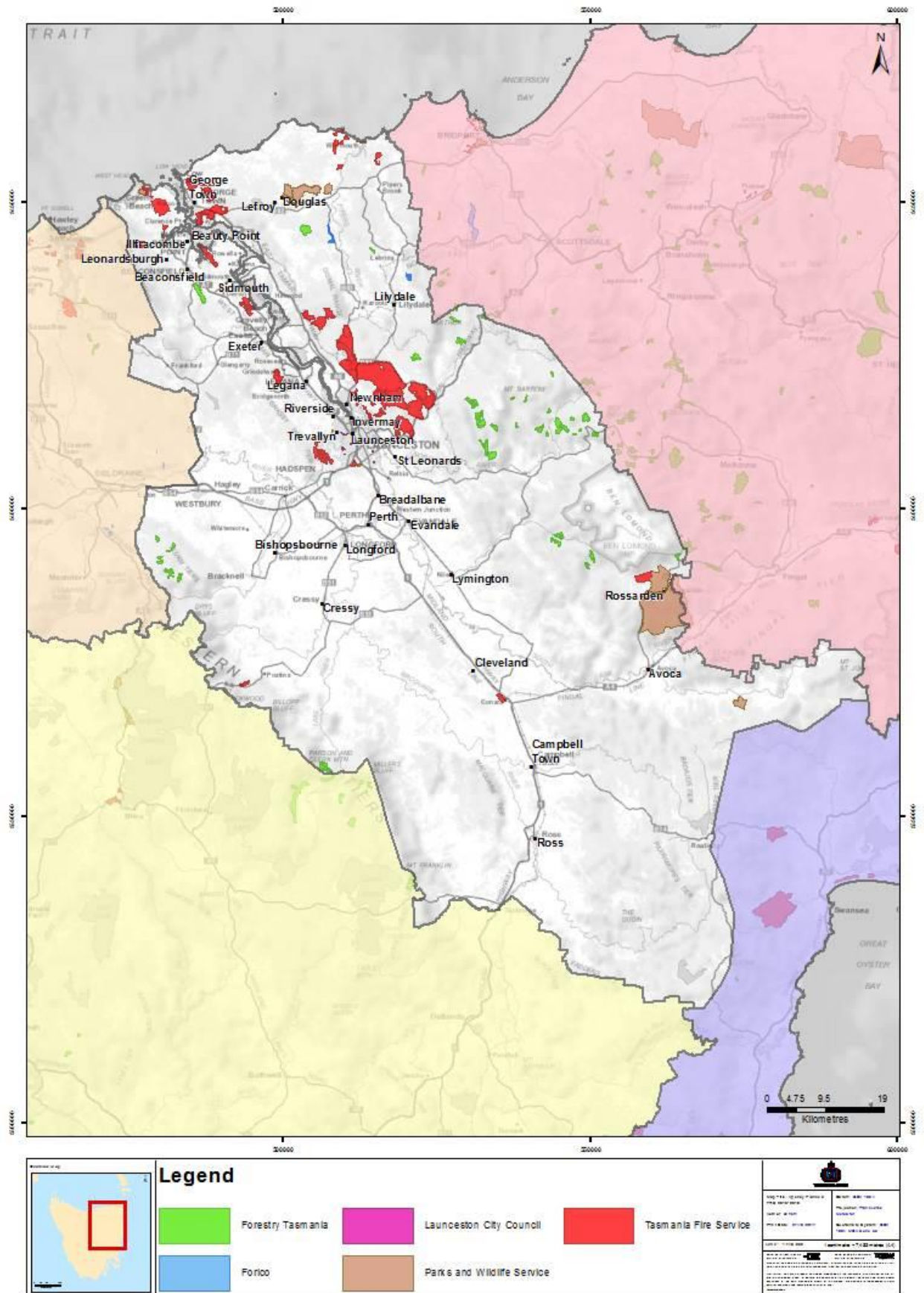
In addition, other organisations including local councils, TasNetworks, Hydro Tasmania and TasWater have annual or cyclic programs which aim to mitigate risk from fire through activities including line trimming, mowing, slashing and fire trail and fire break maintenance.

A comprehensive map showing the location of the entire range of mitigation activities currently carried out or planned for the future within the FMA will assist in developing a co-ordinated approach to landscape scale fire risk mitigation in future Fire Protection Plans.

Other fire related management programs:

A number of current and historic fire management plans and fire related reports have already been prepared for use within the Tamar FMA. A list of these plans is contained in Appendix 12 but the list is incomplete.

Figure 7 – Agency planned fuel reduction burn areas – 2017-2018



4.6 Treatment Program for Priority Communities and Strategic Areas

Following identification and agreement upon priority communities and potential strategic areas for fire mitigation treatment within the Tamar FMA an annual implementation program was developed. The Implementation Program identifies proposed treatment strategies and actions to be undertaken within the Tamar FMA for:

- Priority communities
- Potential Strategic fuel management blocks
- Important community assets
- Strategic fire trails

It also identifies priority locations and actions that are currently unfunded but that could potentially reduce fire risk within the FMA should funding become available.

The implementation program contains proposed treatment strategies and actions to be undertaken within the 12 months following submission of the Fire Management Plan to the State Fire Management Council.

The Implementation Program for the Tamar FMA is contained in Appendix **13**.

4.7 Annual Implementation Program

The 2017/18 Implementation Program for the Tamar FMA is contained in Appendix 13. The implementation program will be coordinated by the Fire Management Area Committee (FMAC) which will also liaise with relevant land managers (including private property owners) to implement the risk mitigation strategies. The FMAC will liaise with the State Fire Management Council to develop a strategy to address funding and resourcing requirements for works associated with the identified risk mitigation actions and program.

4.8 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,
- prescribed burn plans and approvals
- smoke management
- Community consultation
- Community partnerships

Special issues for the Tamar Fire Management Area:

- Smoke inundation from planned burning activities must be avoided near ventilation areas around mines including Beaconsfield (currently inactive). Smoke must also be properly managed near vineyards and airports.

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 Implementation Program. Reference to regular FMAC meetings, review activities and priorities

5.1 Review

Fire Protection Plans, including appendices are to be submitted annually for each fire management area and 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.

The Community Risk Assessments developed and identified in this plan will be reviewed annually.

5.2 Monitoring

The Implementation Program at Appendix 13 is a living document and progression towards completion of the treatments will be monitored and reviewed at least every six (6) months at Fire Management Area Committee meetings. The Implementation Program 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. Additional progress charts can be found in Appendix 14 detailing progress of planned burns from this plan.

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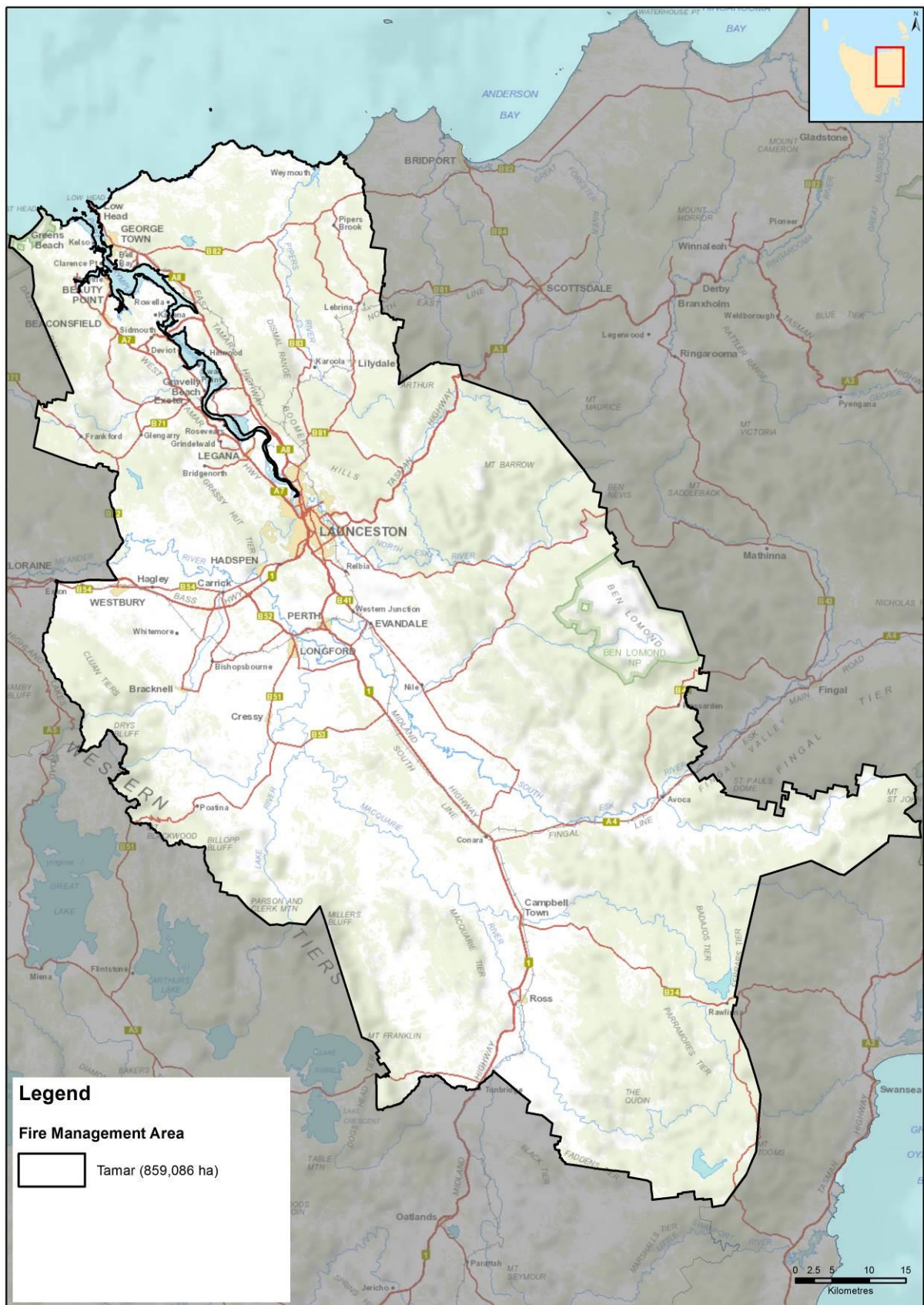
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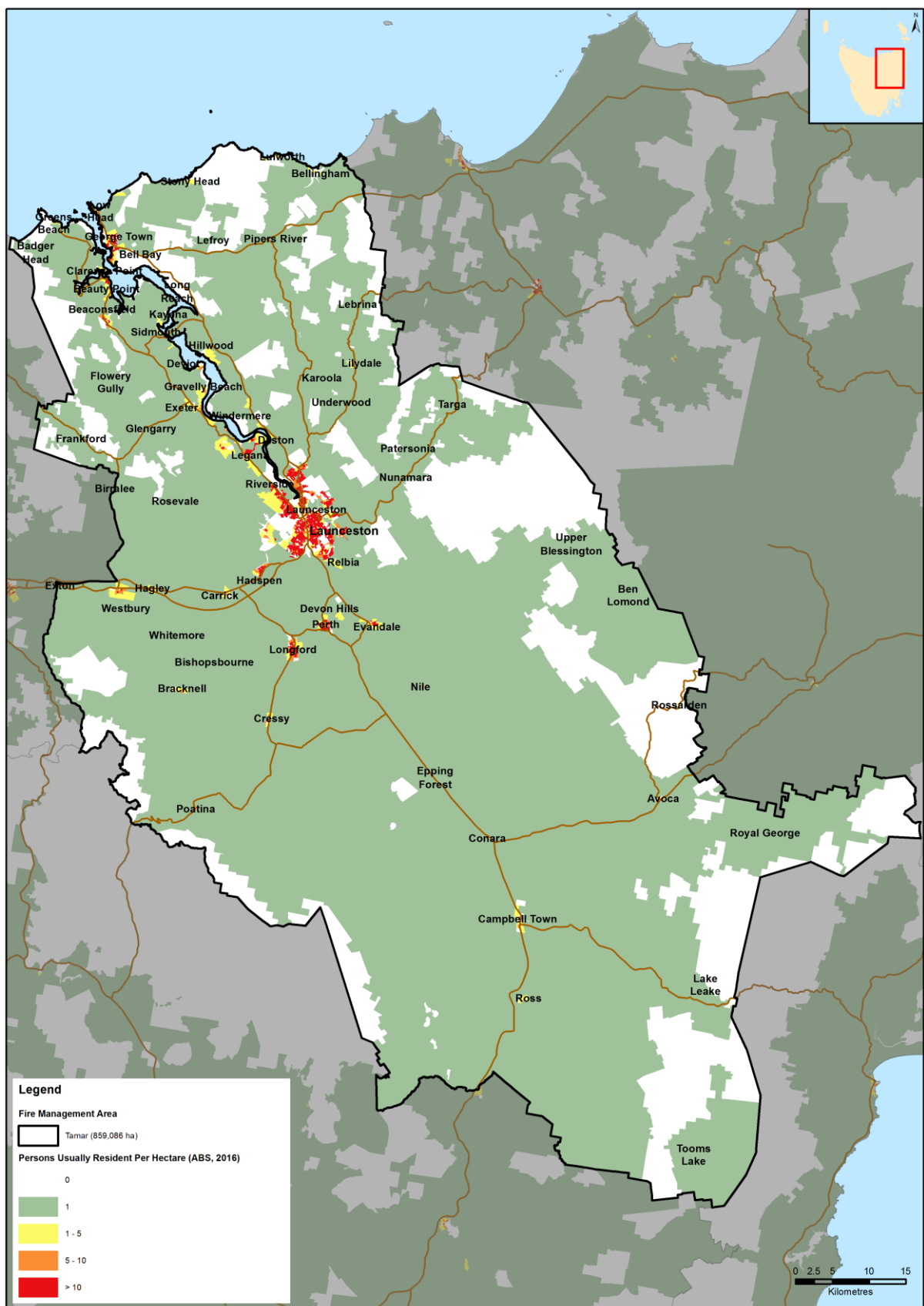
Appendices

- Appendix 1 –Map of Tamar Fire Management Area boundary
- Appendix 2 – Tamar Fire Management Area population distribution map
- Appendix 3 – Tenure map and Tables
- Appendix 4 – Vegetation map and TasVeg community descriptions
- Appendix 5 – Fire frequency, history and ignition causes maps
- Appendix 6 - BRAM (Bushfire Risk Assessment Model) explanation
- Appendix 7 – NERAG risk assessment approach
- Appendix 8 – BRAM risk assessment maps – Likelihood, Consequence, Risk
- Appendix 9 – Phoenix ignition points modelling results
- Appendix 10 - Community specific plans already in place
- Appendix 11 – Treatable/untreatable by planned burning maps and tables
- Appendix 12 – List of fire management related documents for the Tamar Fire Management Area
- Appendix 13 – Annual Implementation Program Tamar FMA (Treatment Schedule)
- Appendix 14 – Annual Implementation Program Progress Charts Tamar FMA

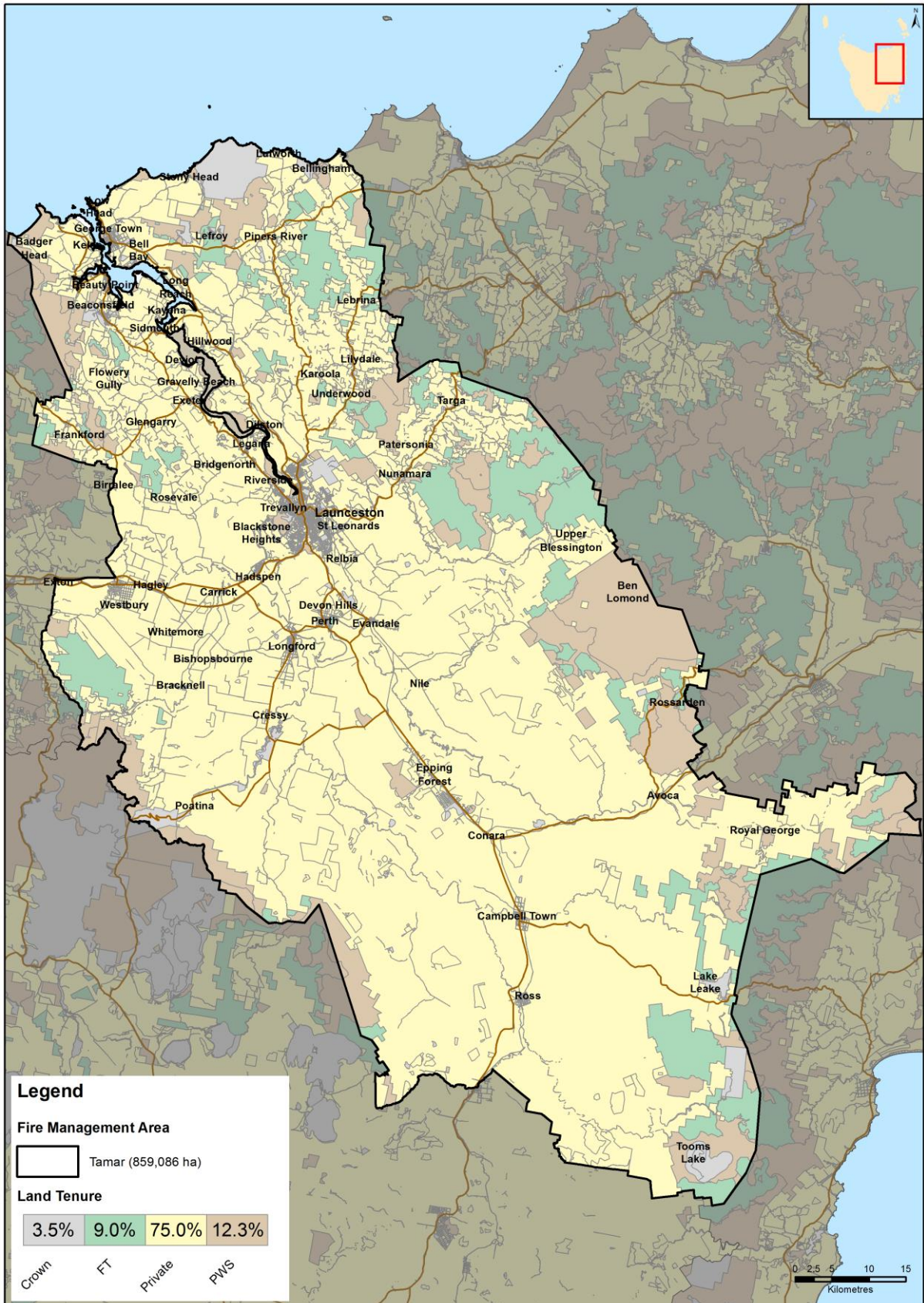
Appendix 1 –Map of Tamar Fire Management Area boundary

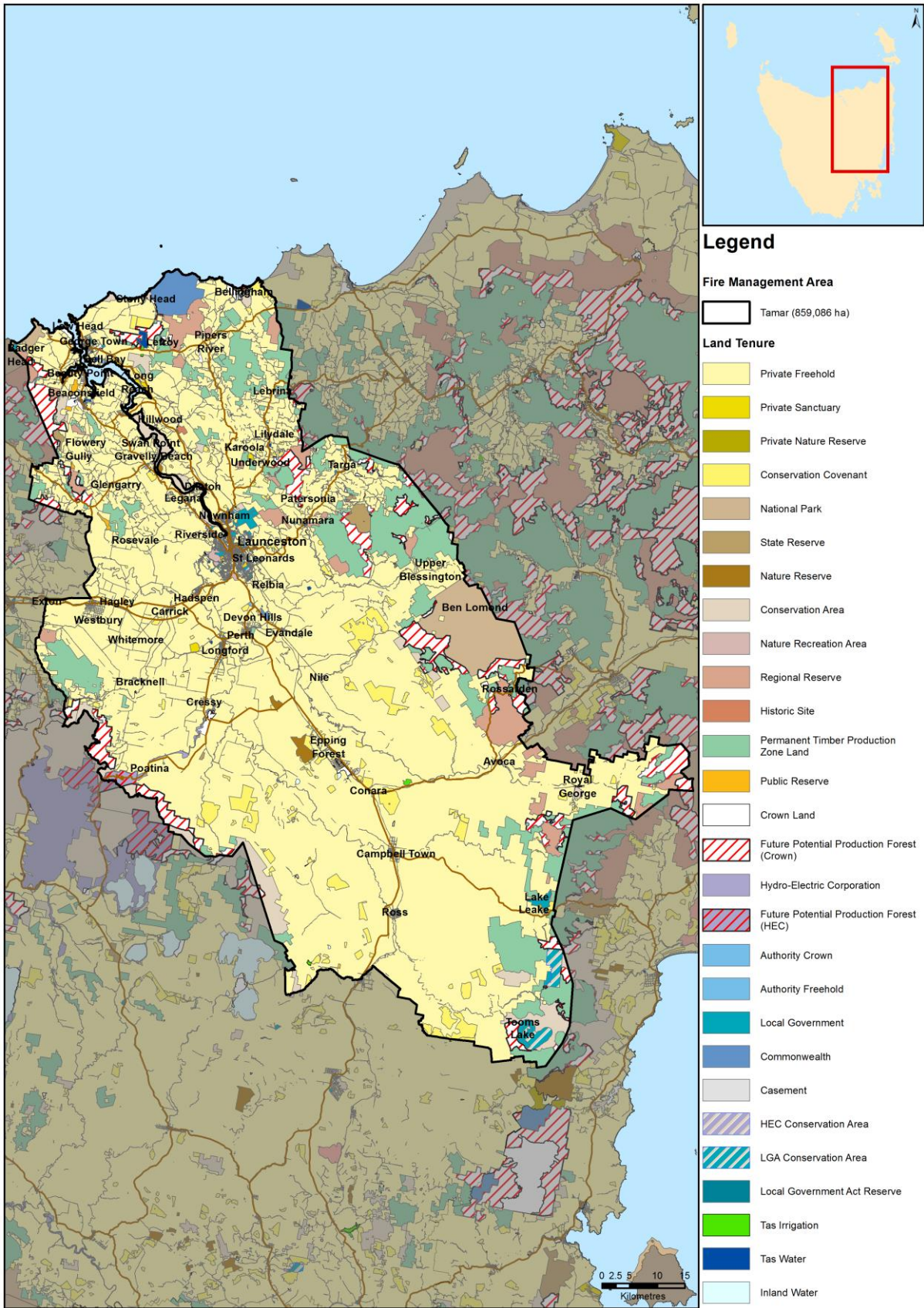


Appendix 2 – Tamar Fire Management Area population distribution map



Appendix 3 – Tenure map and tables

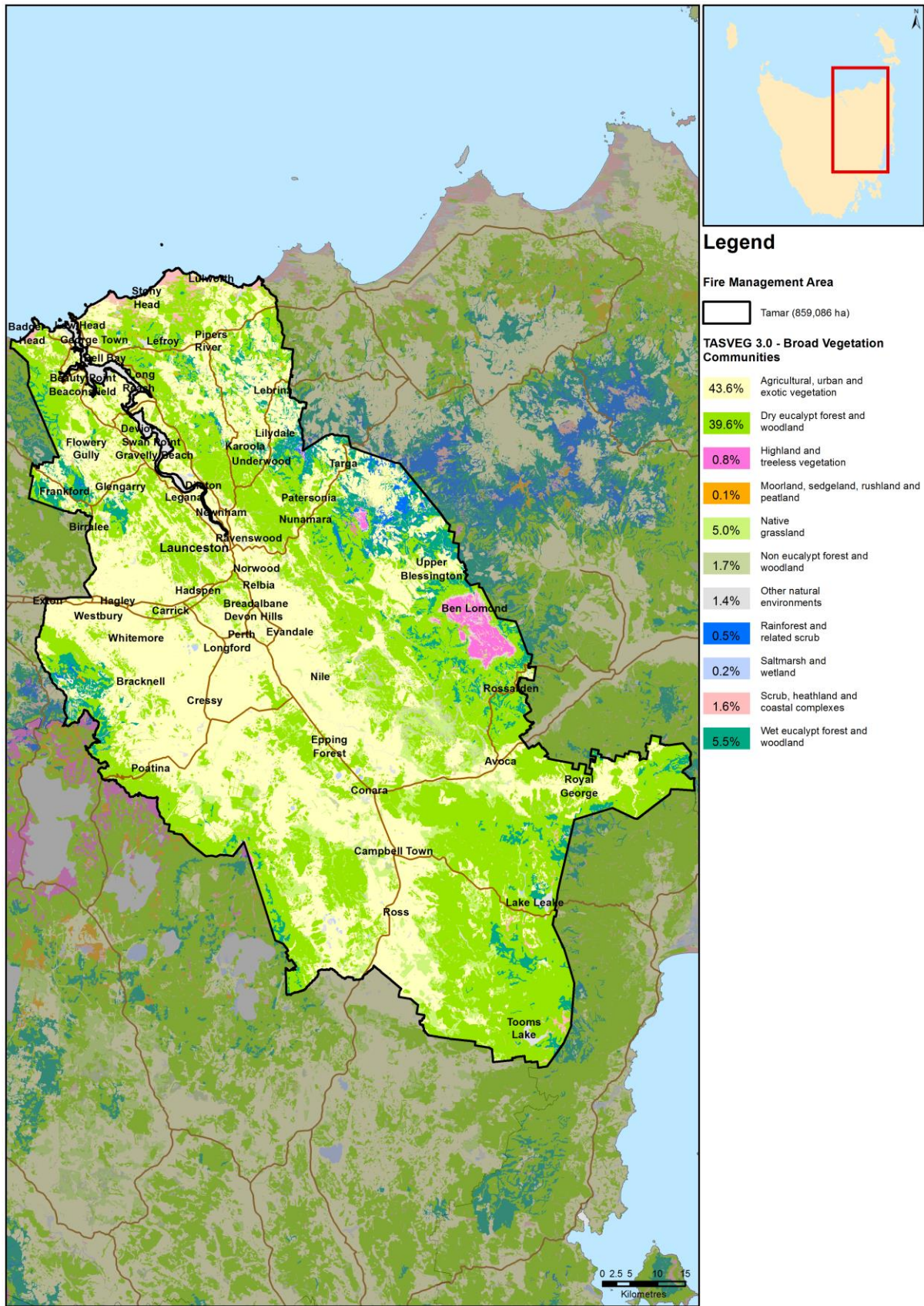




Tenure Type	Hectares	Percentage
Private Freehold	617,902	72.02
Permanent Timber Production Zone Land	77,374	9.02
Future Potential Production Forest (Crown)	36,746	4.28
Conservation Covenant	26,034	3.03
Regional Reserve	22,532	2.63
Conservation Area	20,431	2.38
National Park	19,262	2.25
Casement	8,774	1.02
Commonwealth	5,545	0.65
Local Government	3,840	0.45
LGA Conservation Area	3,127	0.36
Crown Land	2,695	0.31
Public Reserve	2,377	0.28
State Reserve	2,209	0.26
Inland Water	1,993	0.23
Nature Reserve	1,405	0.16
Future Potential Production Forest (HEC)	1,258	0.15
Private Sanctuary	832	0.10
Tas Water	770	0.09
Hydro-Electric Corporation	727	0.08
Nature Recreation Area	546	0.06
Authority Crown	491	0.06
Authority Freehold	392	0.05
Historic Site	252	0.03
Tas Irrigation	243	0.03
Local Government Act Reserve	133	0.02
Private Nature Reserve	47	0.01
HEC Conservation Area	9	0.00

Table 1 – Overview of Land Tenure within the Tamar Fire Management Area

Appendix 4 – Vegetation map and TasVeg community descriptions



Description of each of the broad vegetation community types contained in the TASVEG mapping dataset and found in the Tamar Fire Management Area:

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, heath, wetland and native grassland

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 button grass 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*). Button grass moorland is at the interface of terrestrial and wetland systems, with much of it seasonally waterlogged.

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.

Swamp forest:

Swamp forests have a closed canopy of Blackwood, tea-trees or paperbarks, and typically occupy poorly drained flats. Most communities are confined to low altitude parts of Tasmania and are mainly associated with larger rivers and coastal plains.

Mixed forest:

Mixed forest comprises vegetation with an understorey of rainforest species and an overstorey of eucalypts that becomes sparse as the forest approaches maturity. Often only one species of eucalypt is present, with trees frequently exceeding 50 m in mature forest. Mixed forests represent a transition (in space or time) between the rainforests and the wet sclerophyll forests into which they grade.

Scrub communities:

Most scrub communities occur as localised patches in other forest types. Examples include small stands (or groves) of native olive associated with rocky sites in wet sclerophyll forest.

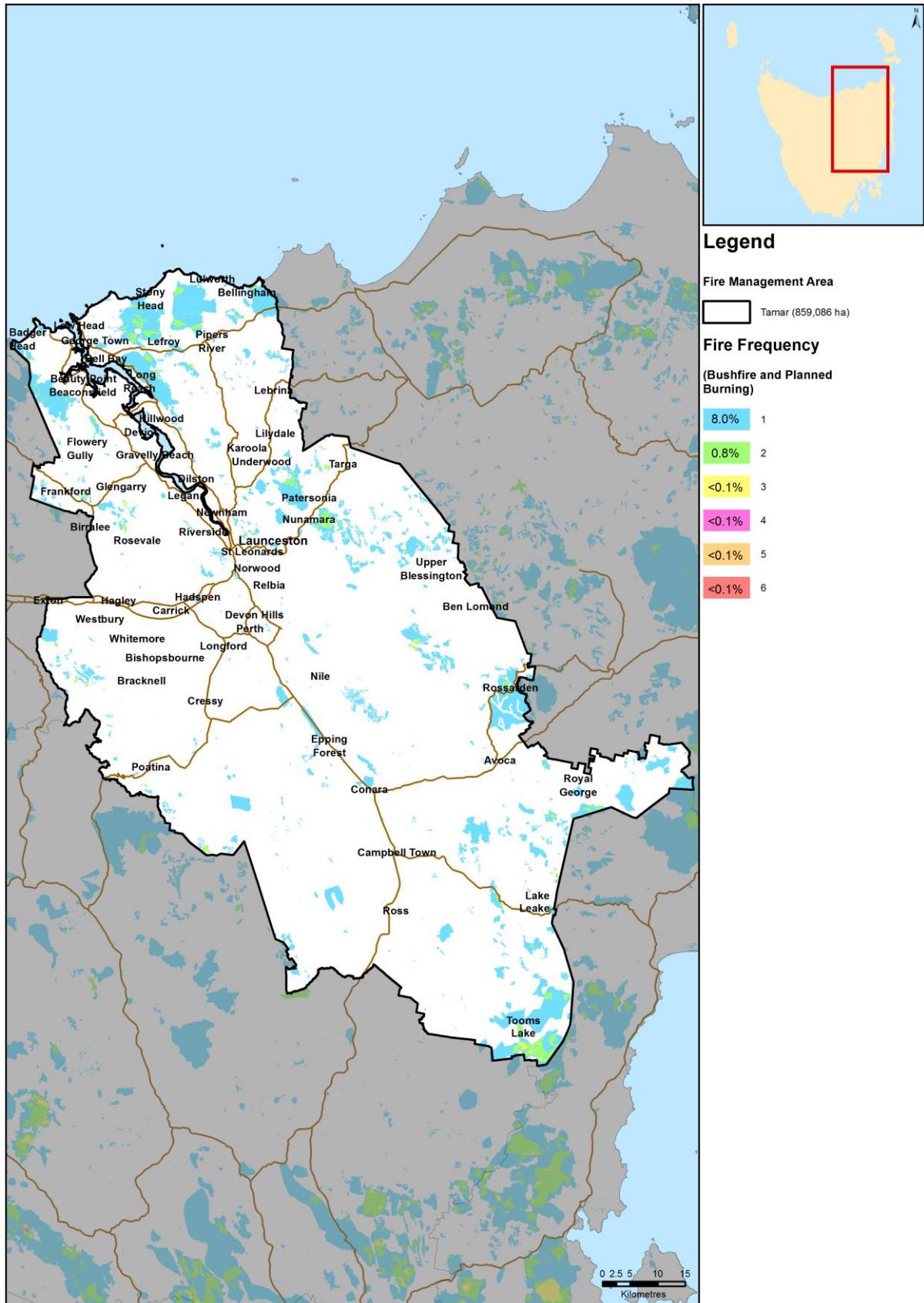
Wet Sclerophyll Forest communities:

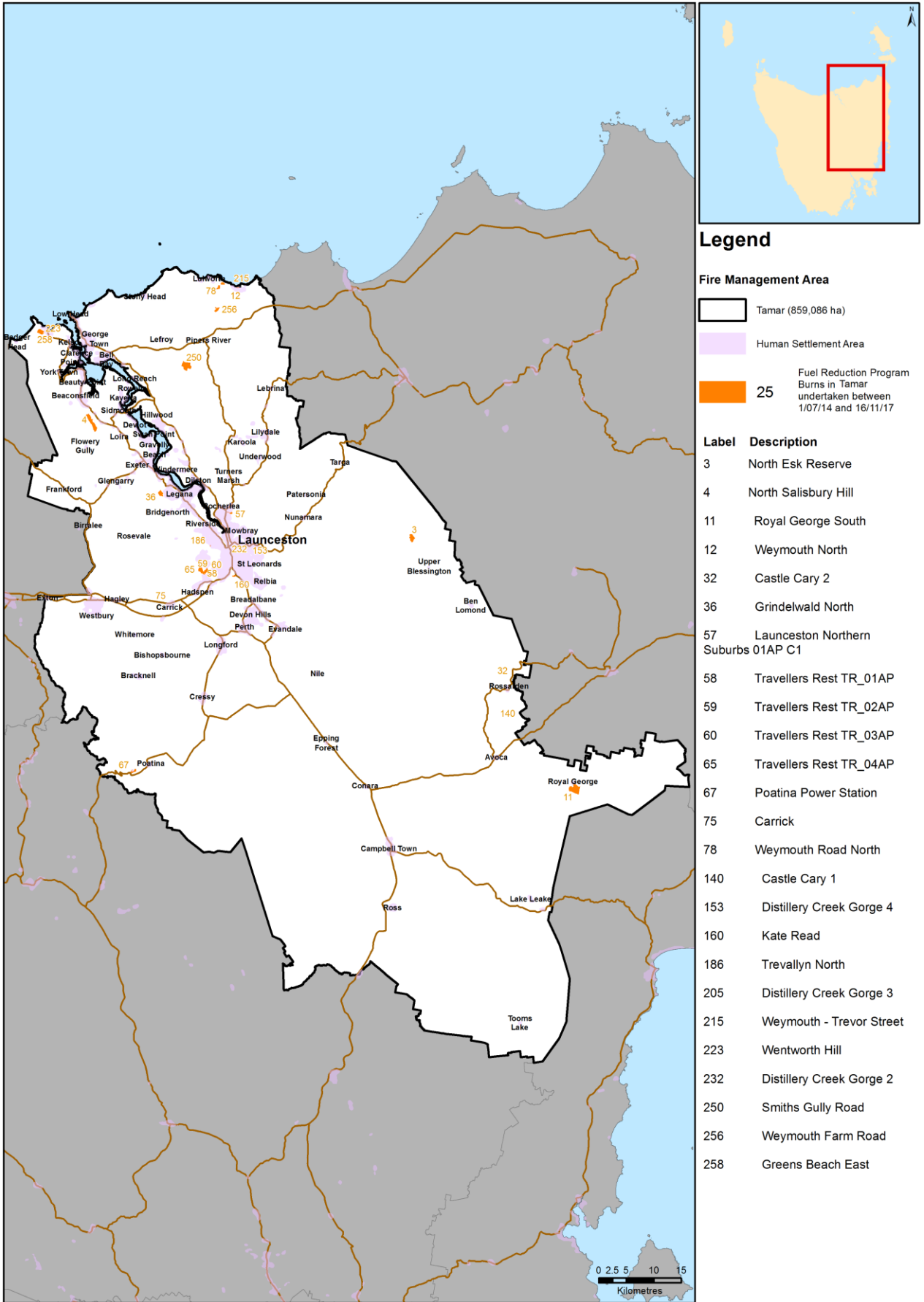
Wet sclerophyll forests are typically dominated by eucalypts and have an understorey dominated by broad-leaved (soft-leaved) shrubs. Trees in mature forest generally exceed 40 m in height. As with the related mixed forest, wet sclerophyll forests typically contain only one or two eucalypt age classes - 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.

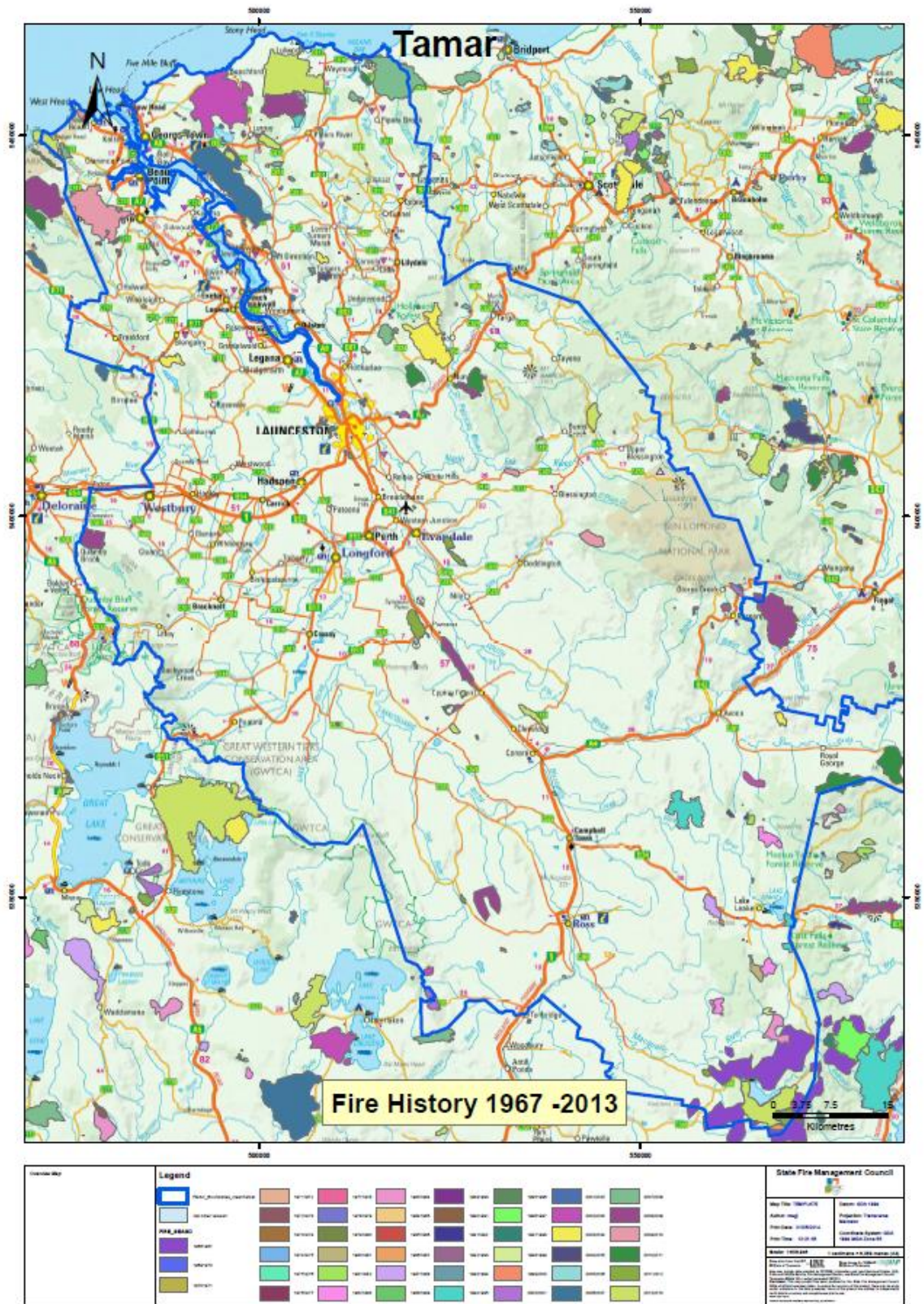
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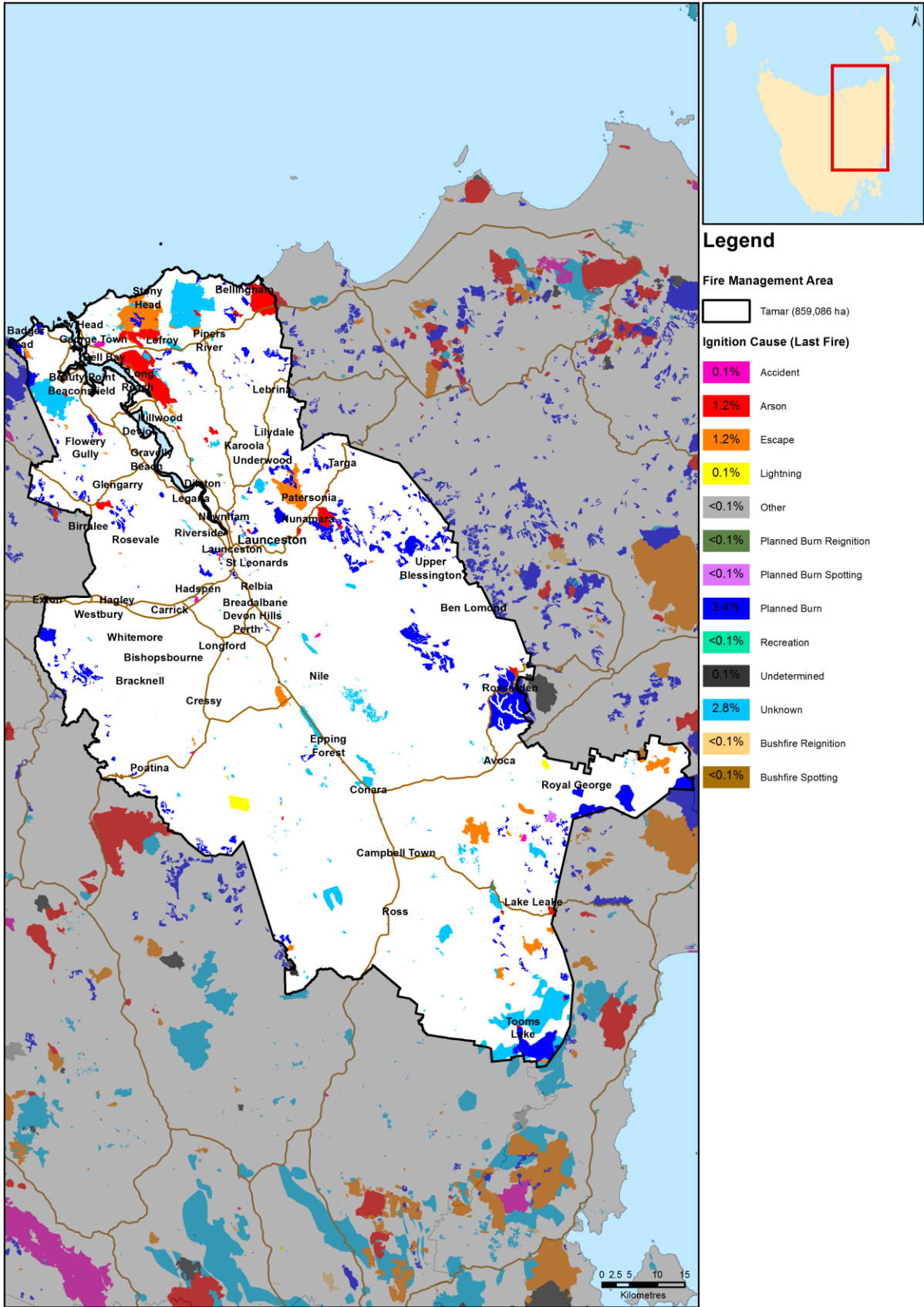
1. Forest Practices Authority (2005). Forest Botany Manual. Forest Practices Authority, Tasmania:
2. [http://dpiwwe.tas.gov.au/conservation/vegetation-of-tasmania/from-forest-to-fjaedlmark-descriptions-of-tasmanias-vegetation-\(edition-2\)](http://dpiwwe.tas.gov.au/conservation/vegetation-of-tasmania/from-forest-to-fjaedlmark-descriptions-of-tasmanias-vegetation-(edition-2))

Appendix 5 – Fire frequency, history and ignition causes maps









Appendix 6 - BRAM (Bushfire Risk Assessment Model) explanation

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:

- Parks and Wildlife Service;
- Tasmania Fire Service;
- STT;
- Tasmanian Farmers and Graziers Association;
- State Emergency Service;
- Forest Industries Association of Tasmania;
- Local Government Association of Tasmania;
- Resource management and conservation , DPIPWE;
- NRM ;
- 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

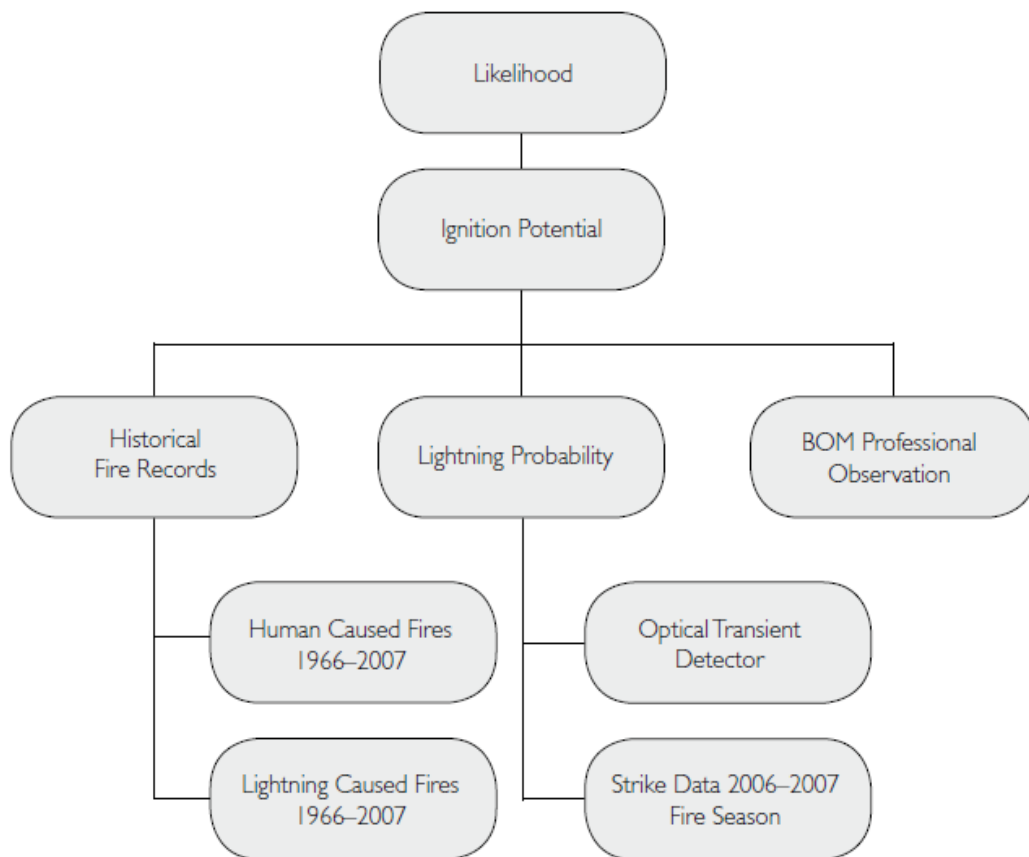
The BRAM identifies the **likelihood and consequence of a fire** at a particular point. The risk is determined through the use of a qualitative risk matrix incorporating likelihood and values at risk (consequences). The process identifies the actual risk at that point not the perceived risk. The output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

The model uses 4 major areas to calculate risk

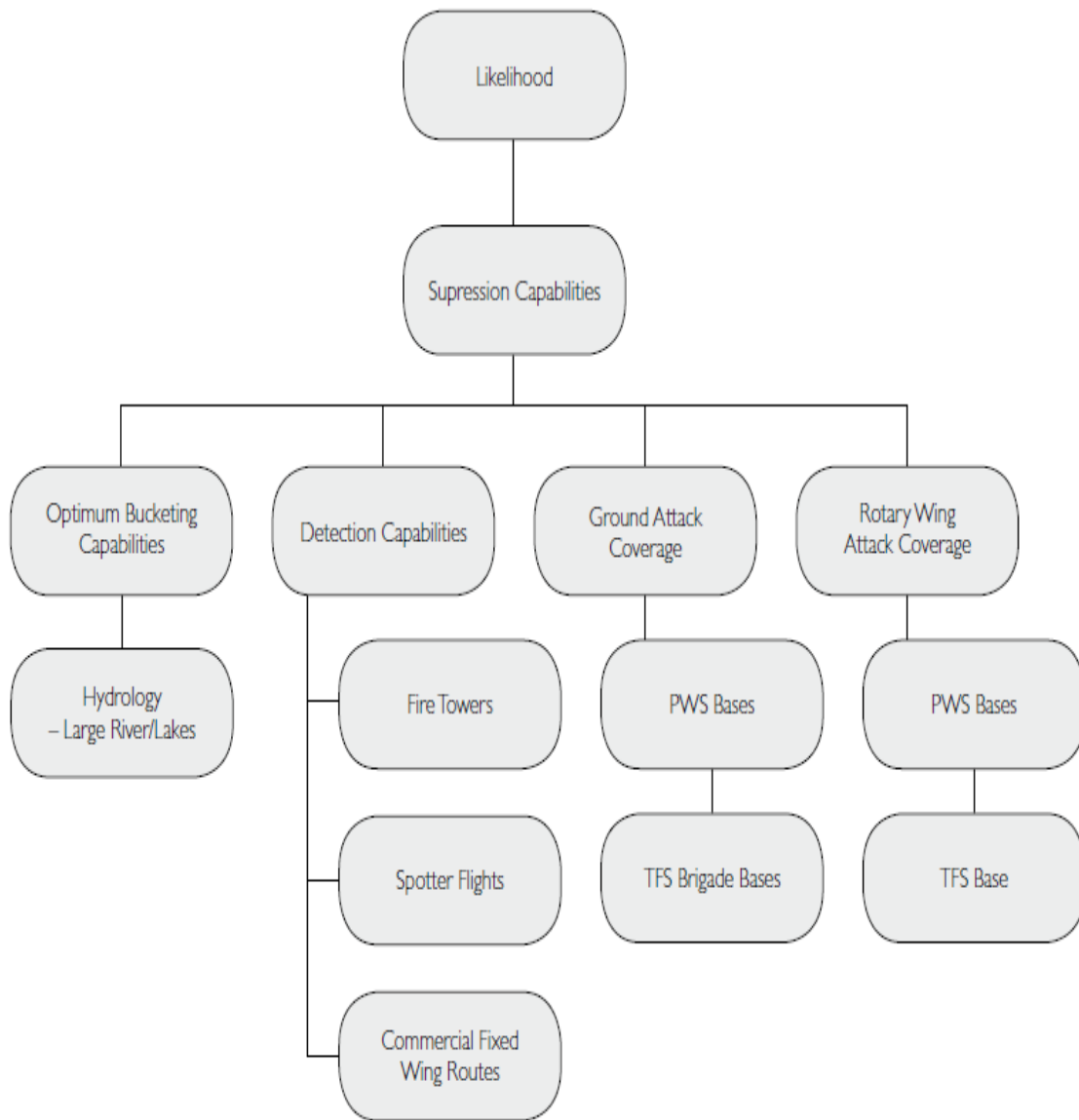
- Fire behaviour potential - the manner in which fuel ignites, flame develops, and fire spreads and exhibits other related phenomena (likelihood).

- 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)

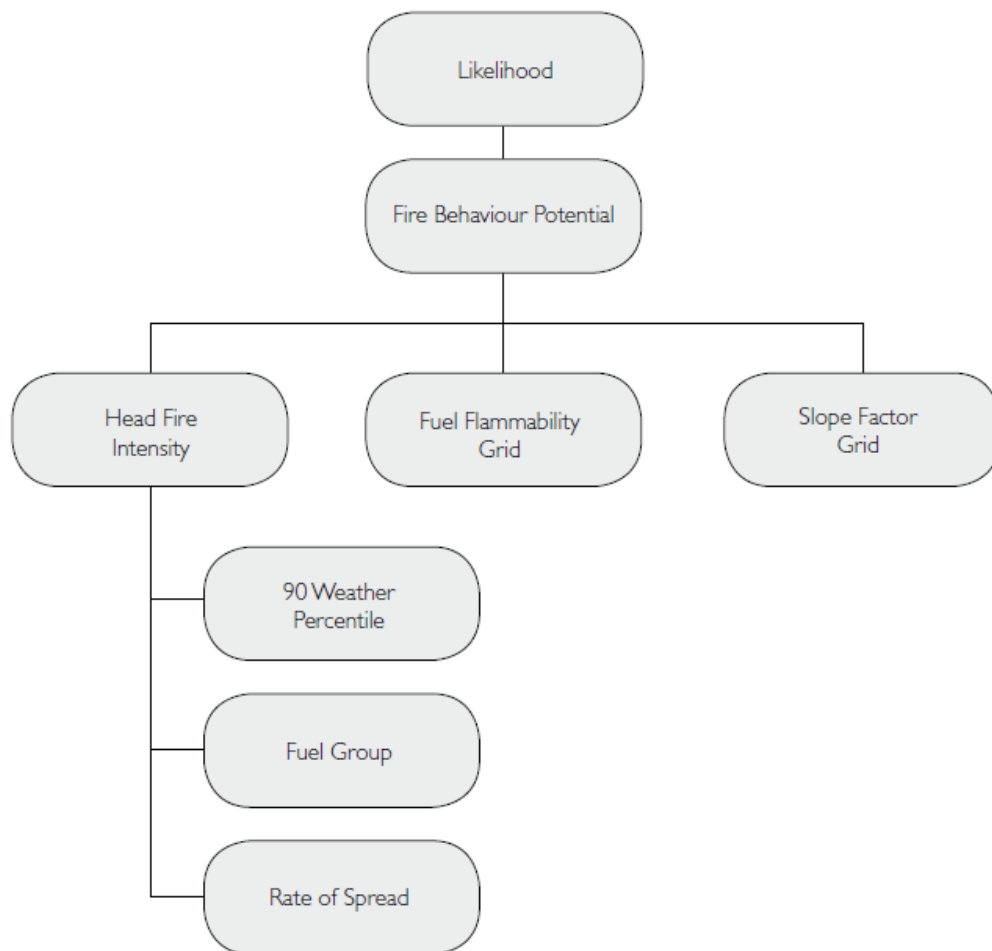
Ignition potential



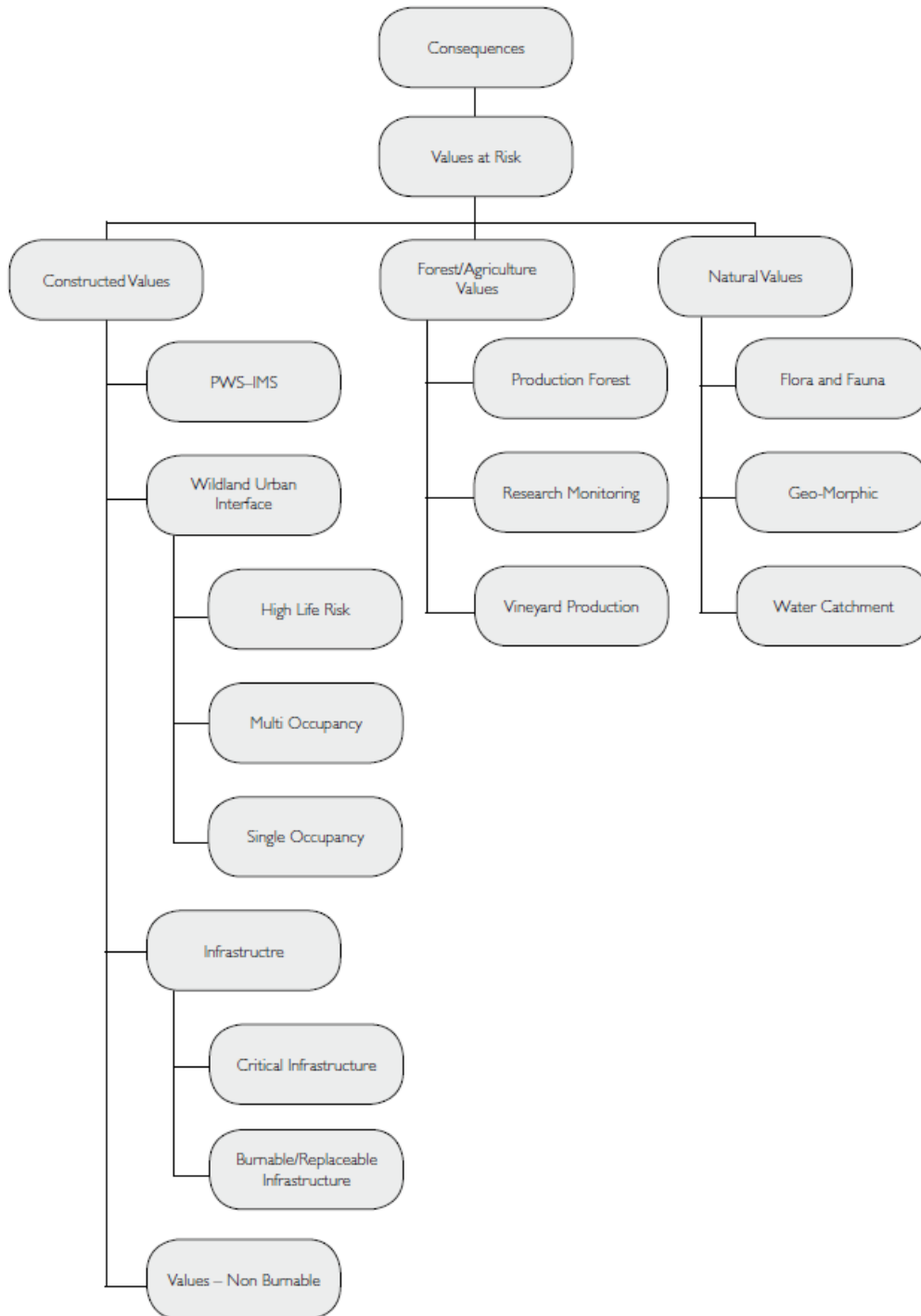
Suppression capabilities



Fire Behaviour Potential



Values at risk



Limitation 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 7 – 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 objects 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 One hundred Thousand), Health 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, health 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 miss 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, inconsequential disruptions at business level	Governing body manages the event within normal parameters, public administration functions without disturbances, public confidence in governance, no media attention	Inconsequential short-term reduction of services, no damages to objects of cultural significance, no adverse emotional and psychological impacts	Inconsequential short-term failure of infrastructure and service delivery, no disruption to the public services

Impact Category Definitions

Impact Category Definitions	
People	<p>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</p> <p>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</p>
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	<p>Relates to the impacts of the emergency on the areas infrastructure/ lifelines/utilities and its ability to service the community</p> <p>Long term failure = repairs will take longer than 6 months</p> <p>Mid-to long term failure = repairs may be undertaken in 3 to 6 months</p> <p>Mid-term failure = repairs may be undertaken in 3 to 6 months</p> <p>Short to mid-term failure = repairs may be undertaken in 1 week to 3 months</p> <p>Short-term failure = repairs may be undertaken in less than 1 week</p>

Likelihood table

Likelihood level	Frequency	Average Recurrence Interval	Annual Exceedance probability
Almost certain	One of more per year	< 3 years	.03
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

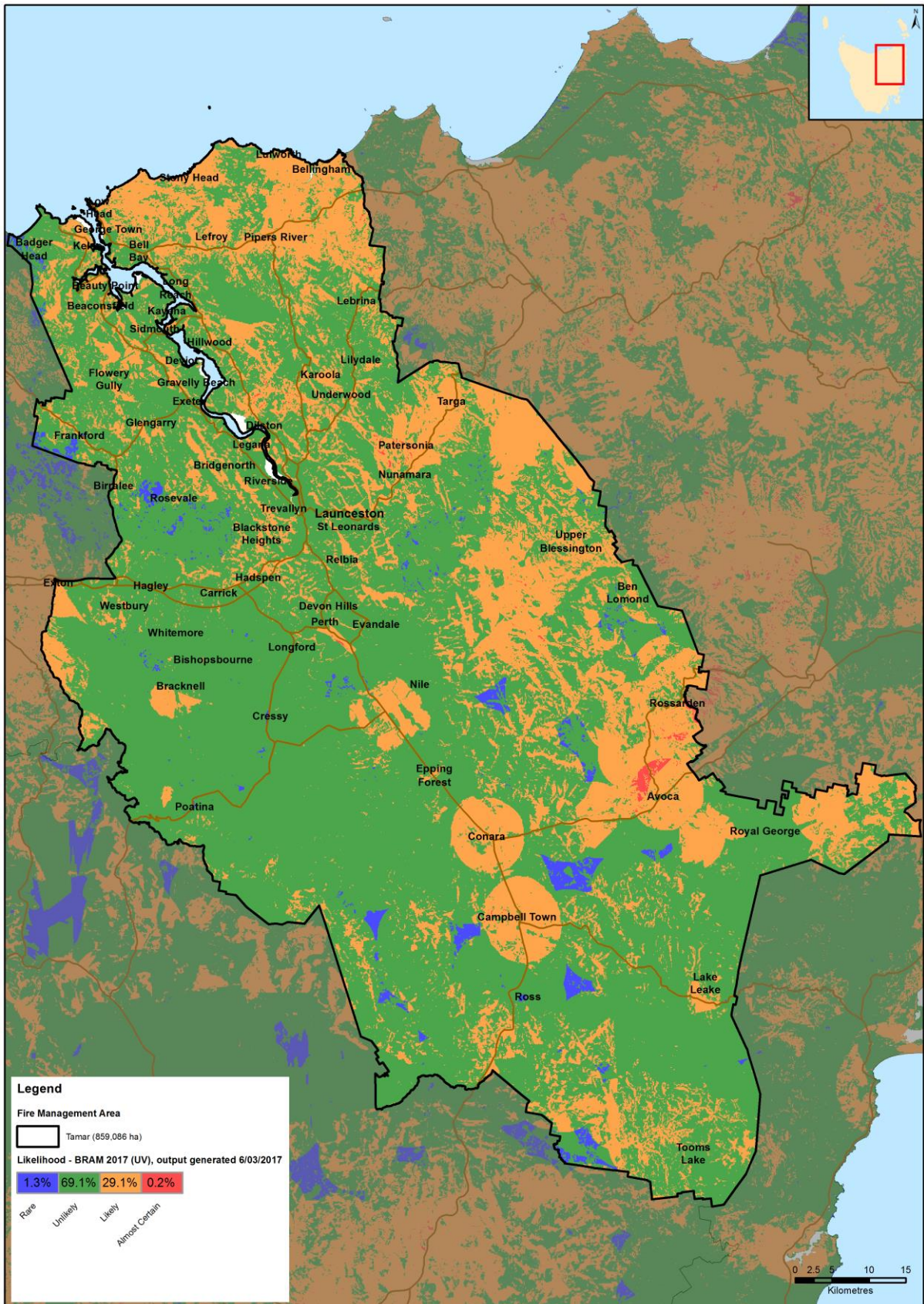
Qualitative risk matrix

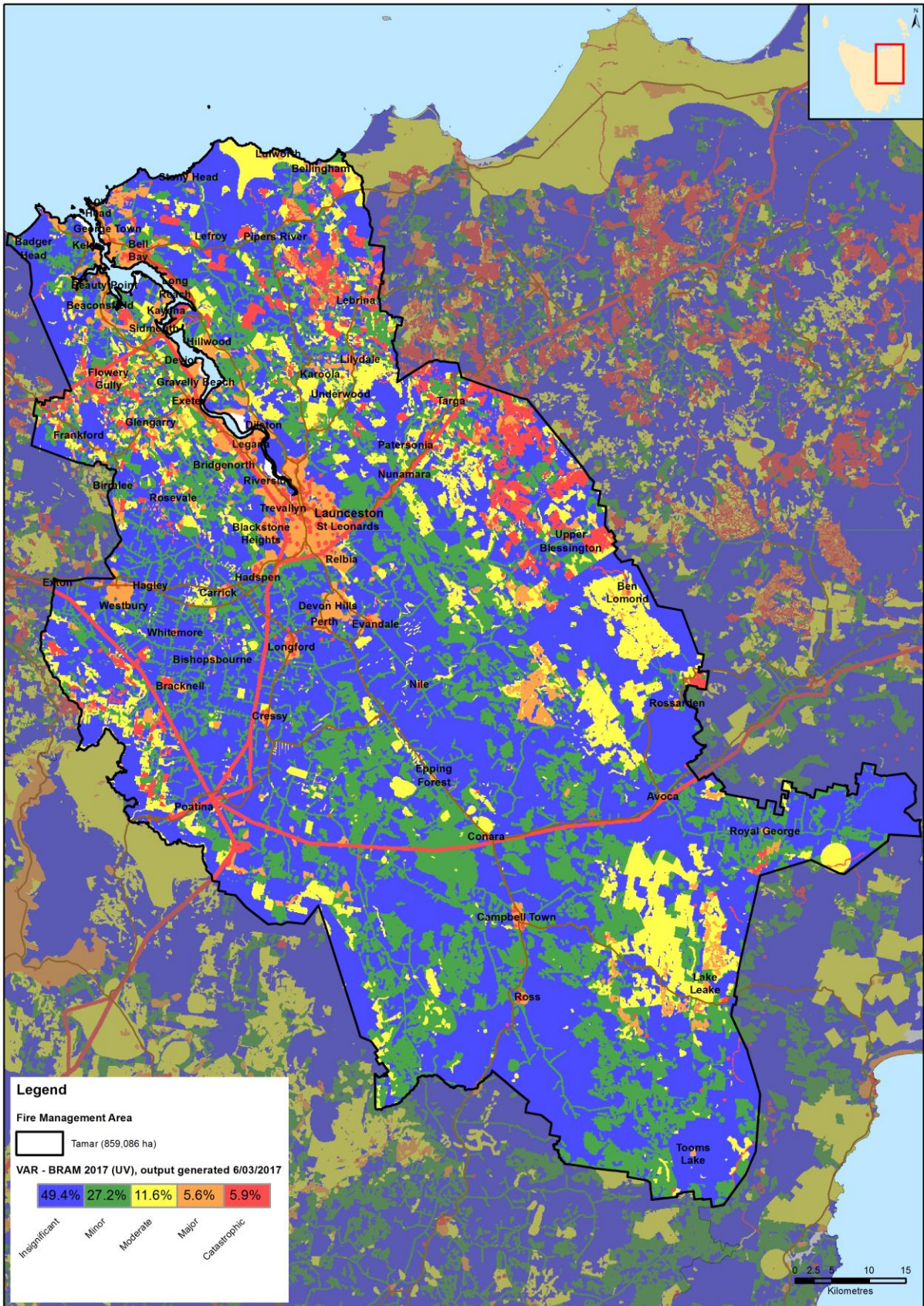
The qualitative risk matrix combines a level of consequence with a level of likelihood to determine a level of risk. The risk level, together with the confidence in the overall assessment process and other factors, will determine the need for detailed analysis and inform the treatment of risks

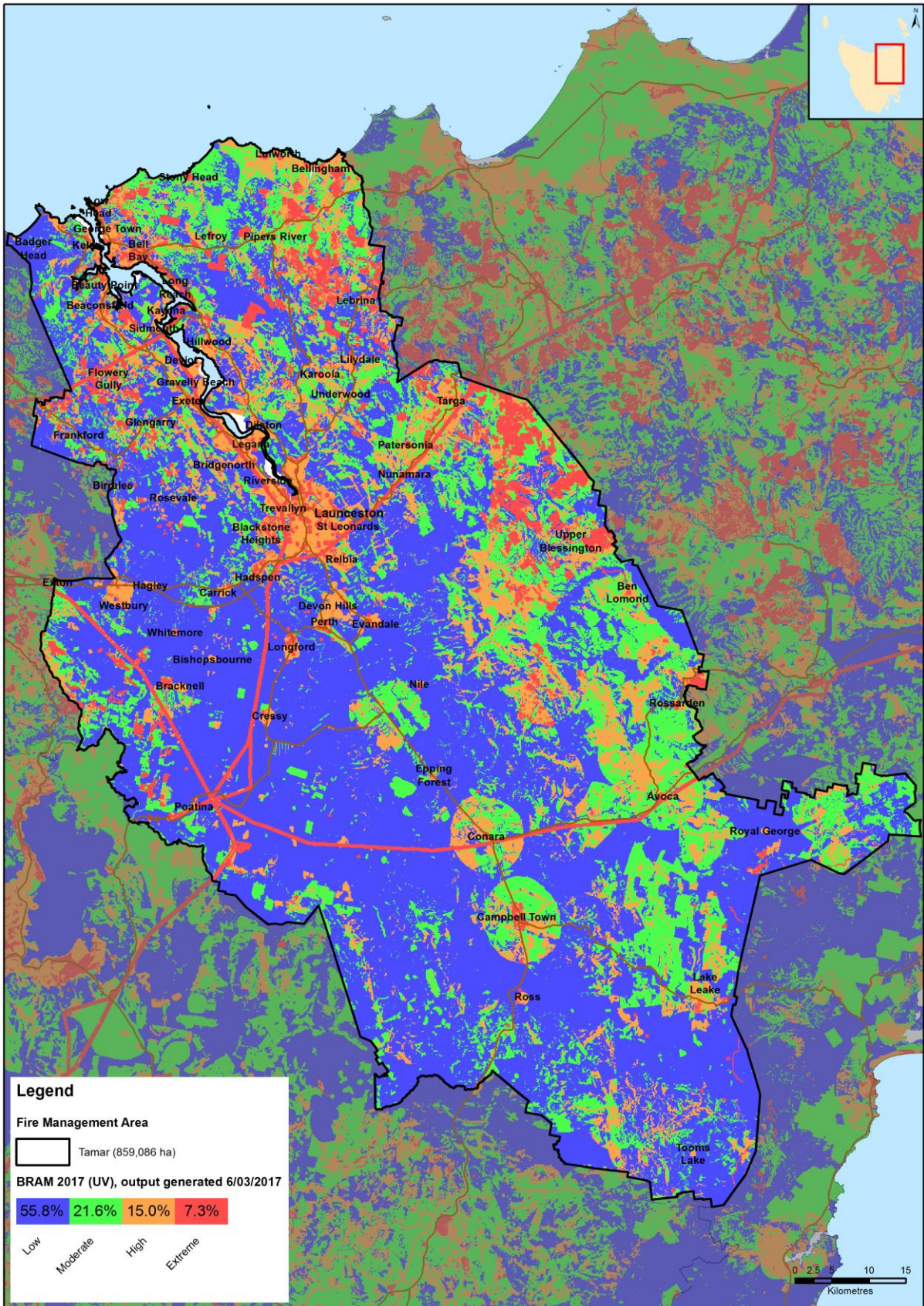
Consequence level

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

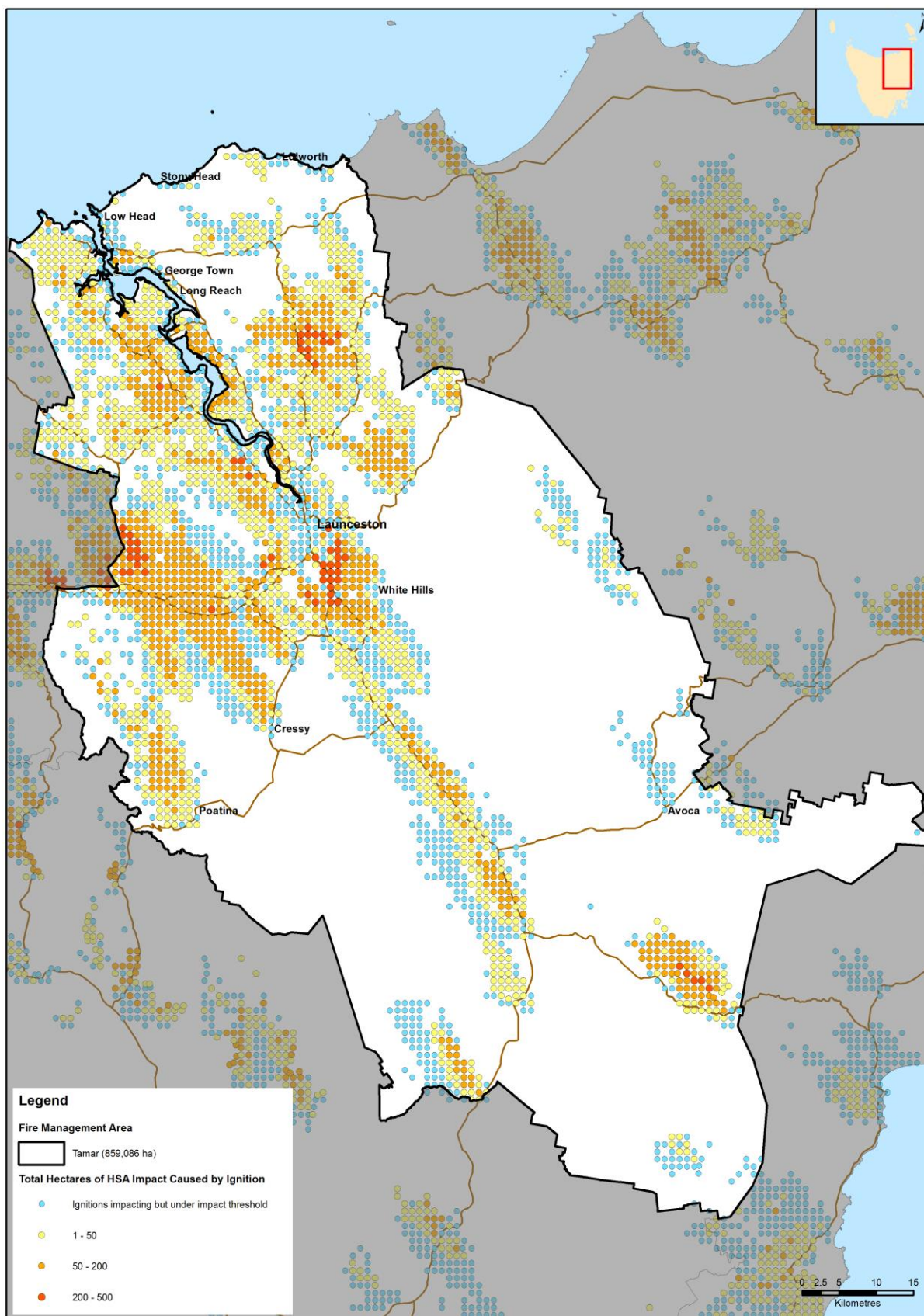
Appendix 8 – BRAM risk assessment maps – Likelihood, Consequence, Risk

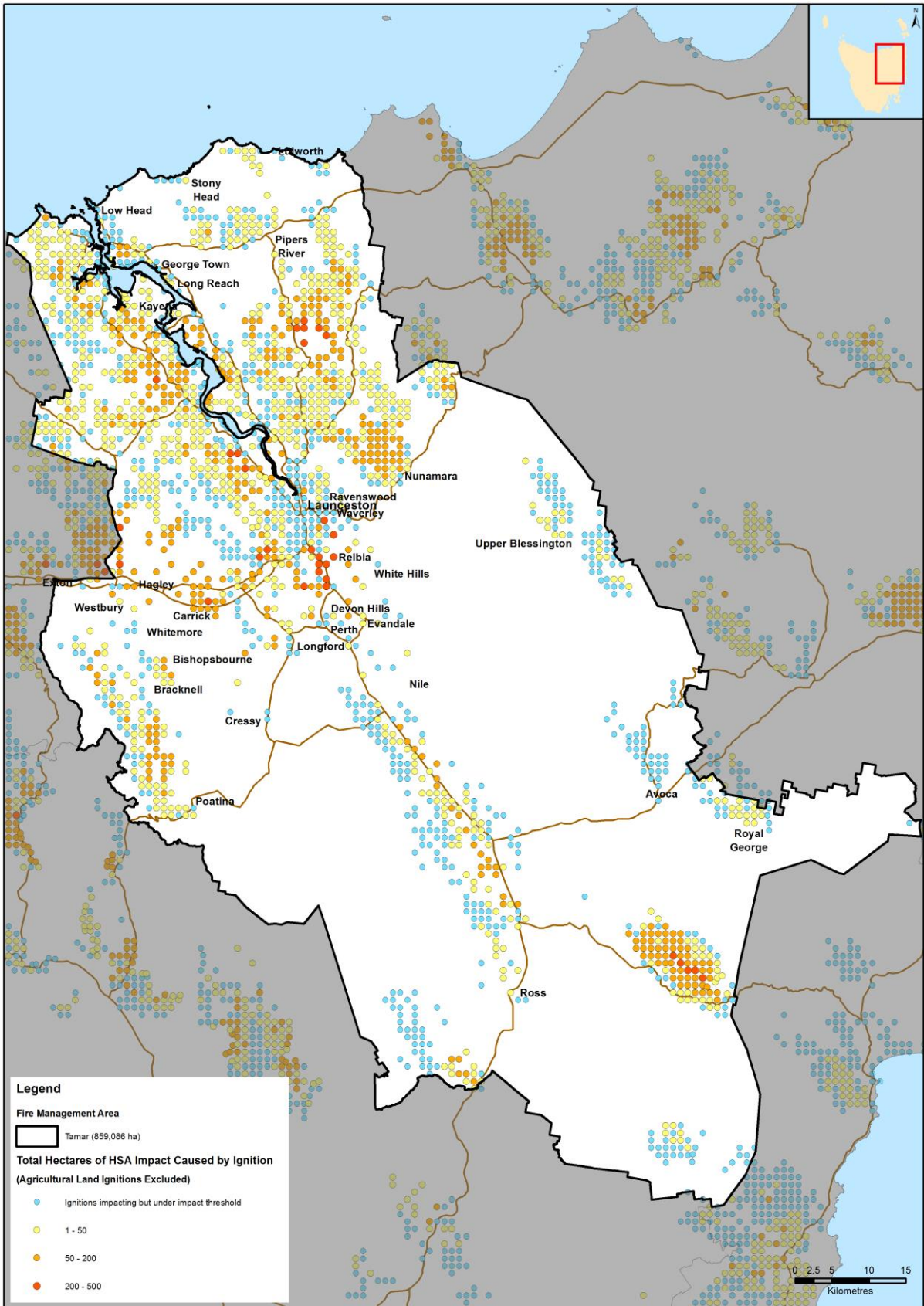


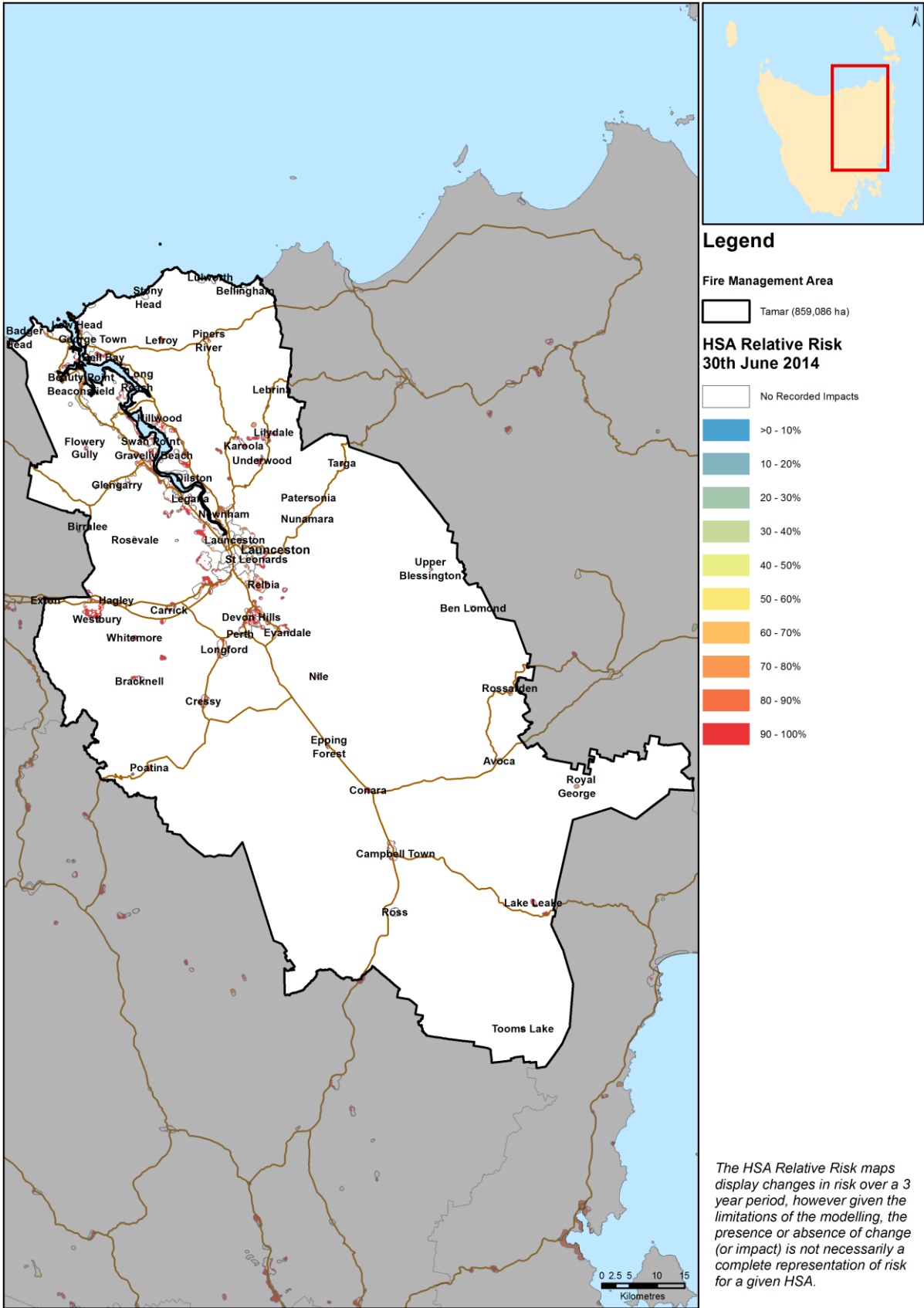


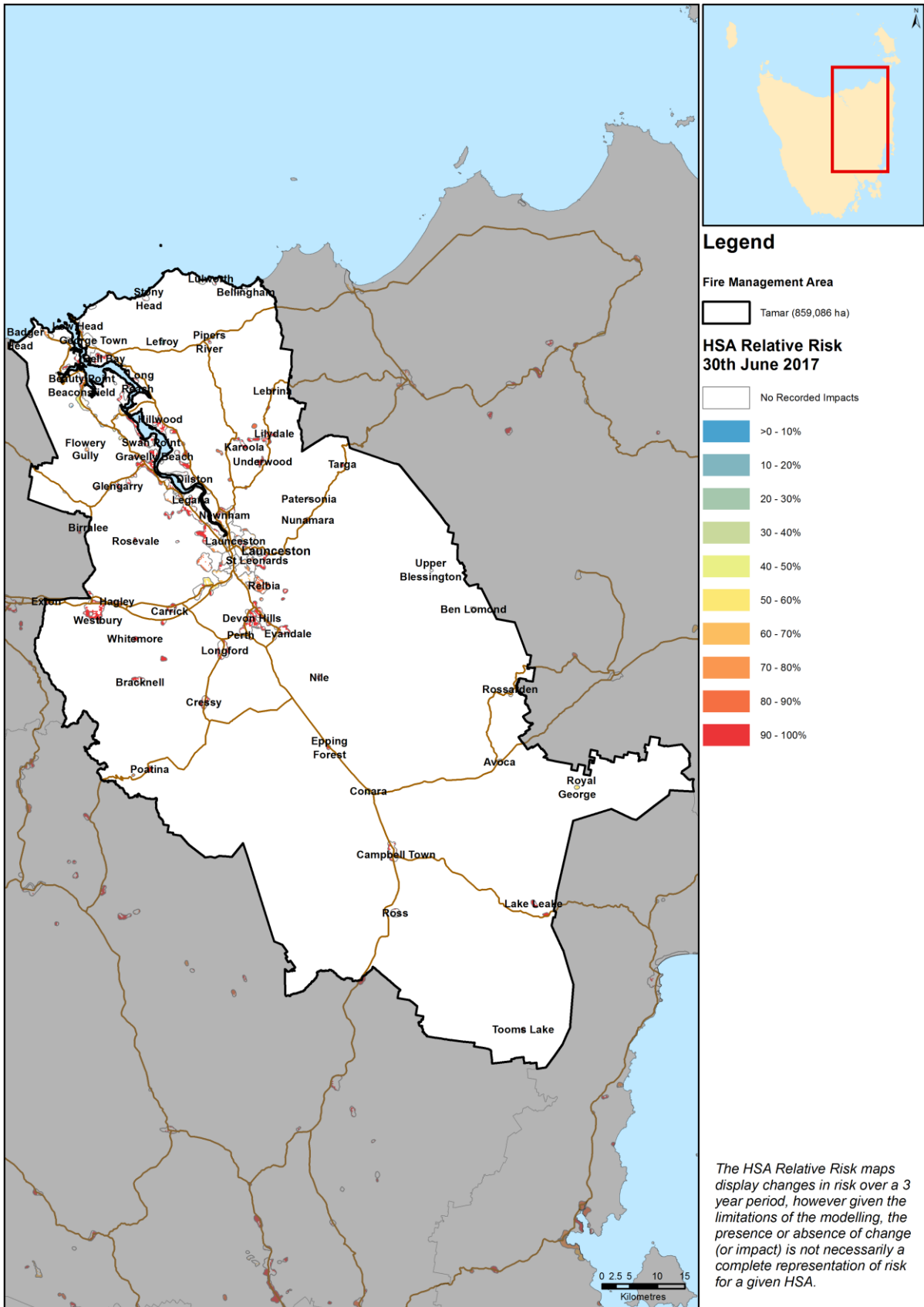


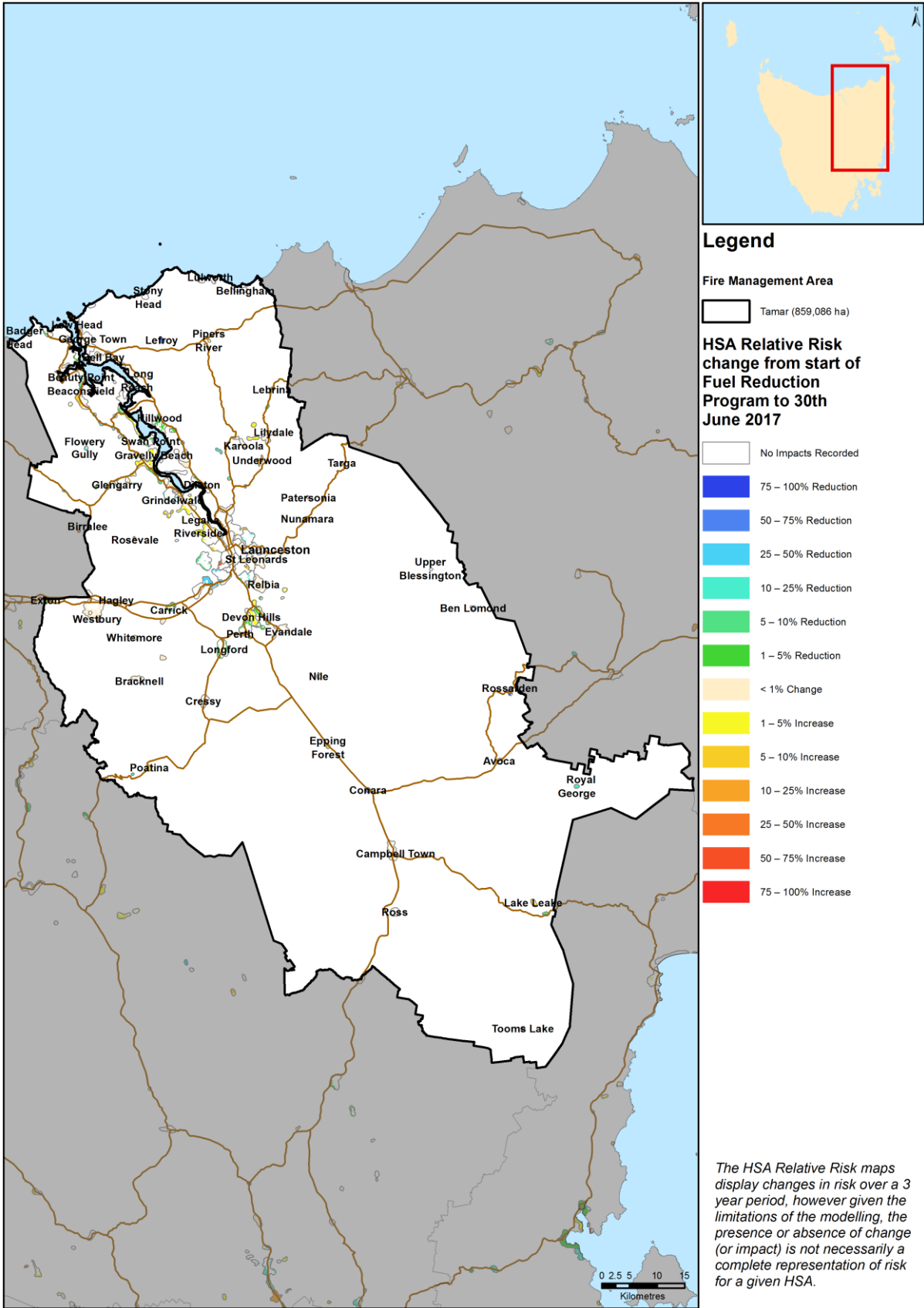
Appendix 9 – Phoenix ignition points modelling results











Appendix 10 – TFS Community Fire Safety Division Programs

Tasmania Fire Service (TFS) Community Protection Planning Officers have begun preparing a range of community specific fire plans for communities. There are three types of plans, each with a different purpose:

1. 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.

2. 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.

3. 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.

A number of approved Community Bushfire Protection Plans and Community Bushfire Response Plans are *already in place* for communities within the Tamar Fire Management Area including:

- Avoca – Community Protection Plan only
- Bellingham
- Blackstone Heights
- Conara
- Hadspen (including Travellers Rest)
- Lake Leake (including Kalangadoo and Rawlinna)
- Lilydale Area
- Nunamara
- Prospect Area
- Ravenswood
- Rocherlea
- Rossarden
- Royal George – Community Protection Plan only
- Turners Marsh (including Lower Turners Marsh, Bangor, Karoola and Lalla)
- Weymouth Area (including Tam O'Shanter and Lulworth)

Community Bushfire Mitigation Plans are in place for:

- Launceston (Northern Suburbs)
- Travellers Rest.

For the next fire seasons, 2017/18 and 2018/19:

Community Bushfire Protection Plans and Community Bushfire Response Plans are proposed for:

- Greens Beach (2017/18)
- Beaconsfield (2018/19)
- Lilydale (Review) (2018/19)

Bushfire-ready Neighbourhoods Program - Tasmania 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

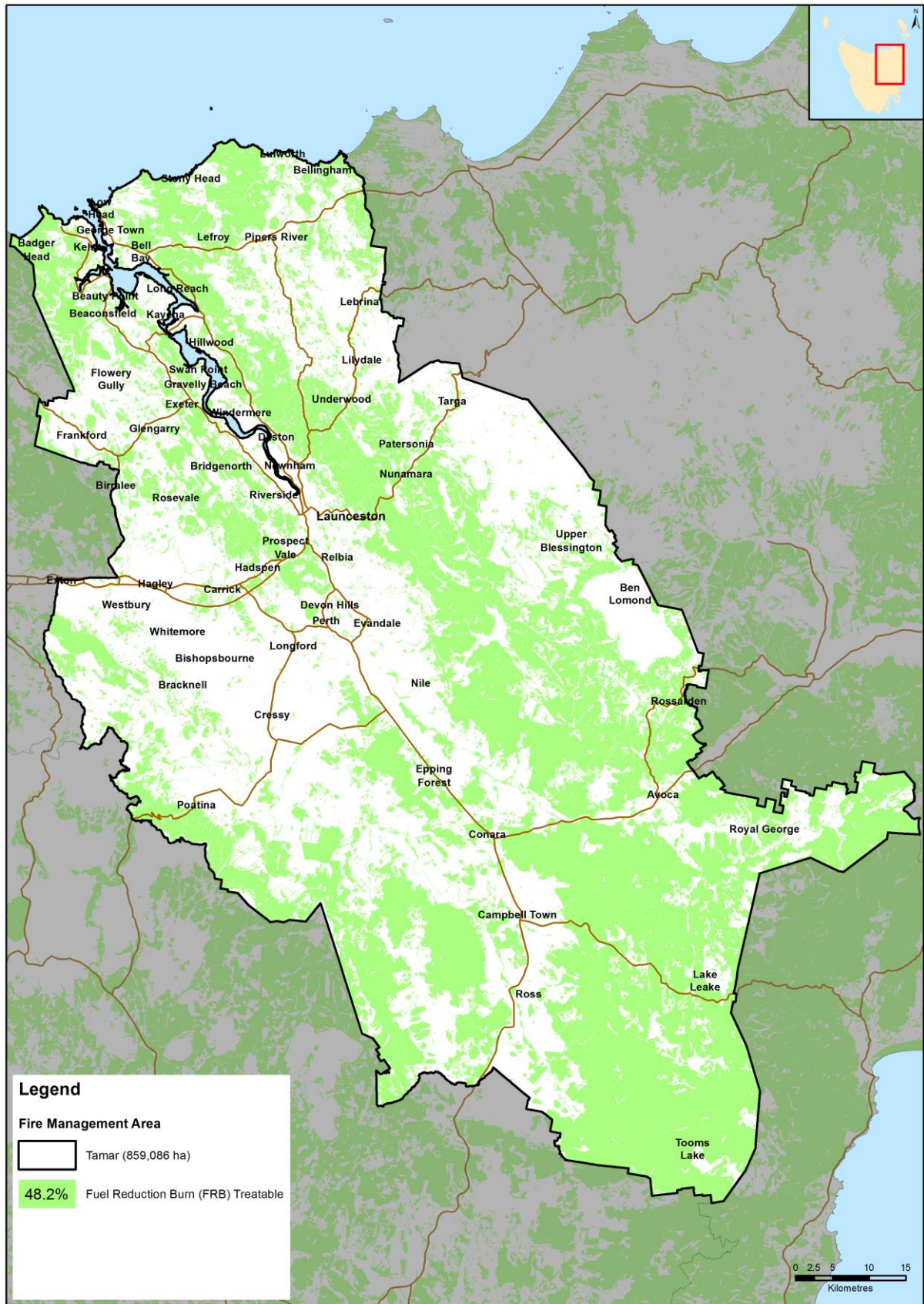
Evaluation results from Round 1 (including Blackstone Heights/Travellers Rest and Tam O'Shanter Area) have proved the program to be very successful.

Round 2 of the Bushfire Ready Neighbourhood Programs for the Tamar FMA will include the following localities:

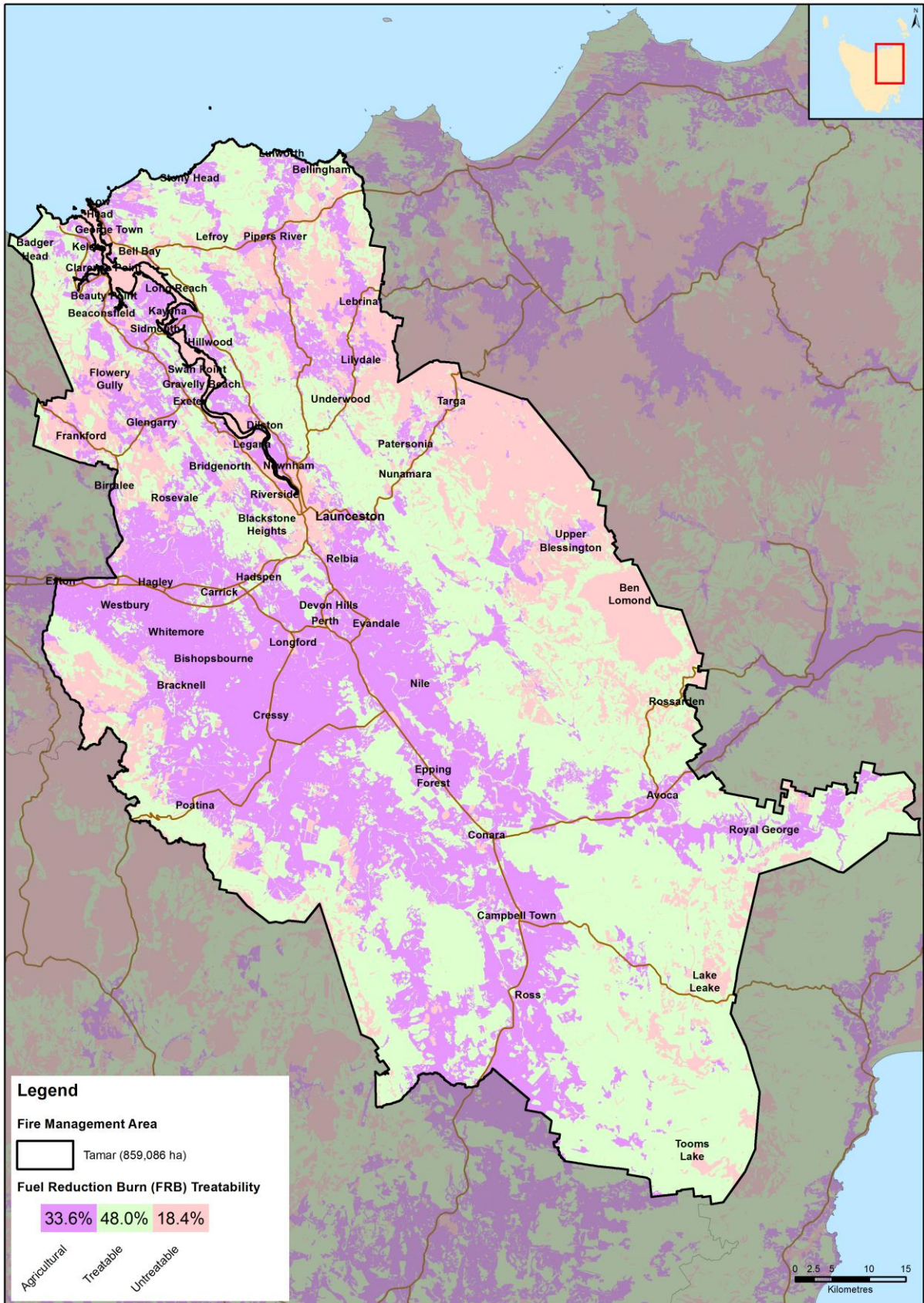
- Rowella/Sidmouth/Kayena
- Kelso/Greens beach
- Bellingham

Appendix 11 – Treatability

Treatable Fuel Reduction Burn (FBR)



Treatable Agriculture



Appendix 11 – Treatable tenure overview

Appendix 11 – Treatable tenure overview – Tamar FMA:

	Tamar Area (ha)	Coverage (%)	Treatable (%) (Per Tenure Type)
Total FMA Area (ha)	859086.0325	100.0	
Tenure			
Authority Crown	493.973763	0.1	18.3
Authority Freehold	1437.590971	0.2	35.7
Casement	7432.534859	0.9	21.9
Commonwealth	5546.312119	0.6	80.2
Conservation Area	12667.61896	1.5	59.6
Conservation Covenant	25550.47441	3.0	91.8
Crown Land	2547.895853	0.3	52.0
Crown Lease or Licence	939.70744	0.1	34.4
Forest Reserve	22345.35431	2.6	83.6
Game Reserve	0	0.0	0.0
HEC Conservation Area	8.722654	0.0	23.0
Historic Site	252.552992	0.0	79.7
Hydro-Electric Corporation	1979.533487	0.2	67.5
LGA Conservation Area	3127.047393	0.4	73.7
Local Government	3737.188152	0.4	53.8
Local Government Act Reserve	131.7841	0.0	24.7
National Park	19257.61204	2.2	36.6
Nature Recreation Area	546.25517	0.1	82.1
Nature Reserve	1406.860839	0.2	96.6
Portfolio Crown	0	0.0	0.0
Private Freehold	619303.7376	72.1	45.3
Private Nature Reserve	47.060018	0.0	81.8
Private Sanctuary	834.388535	0.1	39.1
Public Reserve	2371.573154	0.3	48.1
Regional Reserve	8108.394335	0.9	85.6
State Forest	113780.1125	13.2	57.7
State Reserve	2208.772206	0.3	25.6
<i>No Tenure</i>	3022.974576	0.4	0.0

Appendix 12 – Bushfire Interface Areas



Appendix 13 – List of fire management related documents for the Tamar Fire Management Area

Existing reports/plans – Fire related Tamar Fire Management Area

A number of fire related plans have already been prepared for use within the Tamar Fire Management Area including:

Parks and Wildlife Service Tasmania:

- Beechford Fire Strategy (2012) Parks and Wildlife Service Tasmania.
- Kate Reed Nature Recreation Area and Adjacent Crown Lands Fire Strategy (2011) Parks and Wildlife Service Tasmania.
- Trevallyn Nature Recreation Area Fire Management Strategy 2011- 2016. Parks and Wildlife Service Tasmania.
- Northern Region Strategic Fire Management Plan (2009) Parks and Wildlife Service Tasmania

Forestry Tasmania:

- Bass Forest District Tactical Fire Management Plan (Forestry Tasmania, Sept 2013)

TasNetworks:

- Transmission Line Easements Asset Management Plan D03/5593 Issue 5.0, May 2014 (Transend)

Launceston City Council:

- Bushfire Management Strategy for Council Owned and Managed Land 2015-2025
- Carr Villa Flora Reserve & Memorial Park Fire Management Plan 2017-2027
- Cataract Gorge Reserve Fire Management Plan (Including Hardwicke Street Reserve) 2016-2026
- Distillery Creek Gorge and Waverley Lake Park Fire Management Plan 2017-2027
- Havelock Street Reserve Fire Management Plan 2017-2027
- Lilydale Area Reserves Fire Management Plan (incorporating Merthyr Park & Lilydale Falls Reserve) 2017-2027
- Punchbowl Reserve Fire Management Plan 2016-2026
- Ravenswood Area Reserves Fire Management Plan (incorporating Vermont Road and Ravenswood Bushland Reserves) 2017-2027
- Russells Plains Fire Management Plan 2016-2026
- Tasman Bushland Highway Fire Management Plan 2017-2027
- Youngtown Regional Park Fire Management Plan 2017-2027

Hydro Tasmania:

- Operational Fire Management Plan – Tamar Valley Power Station (2011) Hydro Tasmania. SEMF Consultants
- Bushfire Risk Assessment and Management Plan for Hydro Tasmania's Assets (2013) AVK Environmental Management, Sandford.

- Community Bushfire Mitigation Plan (Draft) for Travellers Rest (including Blackstone Heights). Tasmania Fire Service (2014).

Fire related plans – Tamar FMAC

Appendix 14 – Annual Implementation Program Tamar FMA (Treatment Schedule)

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
COMMUNITIES								
Nunamara	Nunamara is an isolated and dispersed population with dry forest to the NW. Potentially at risk of fires originating from Underwood and/or Rocherlea. A high proportion of land is privately owned. Fire trail infrastructure on and around private property vegetated areas is poor.	Majority of land tenure is private freehold. Some Permanent Timber Production Zone Land & Prossers Regional Conservation Reserve. TasWater a small amount of land east of Waverley.	The area to the north west of Nunamara was subject to a bushfire in January 2004. Otherwise fire history is unknown. A Community Bushfire Protection Plan and Community Bushfire Response Plan were completed for Nunamara in 2017	<ol style="list-style-type: none"> 1. Continue mitigation planning for Boomer Hills and Tippogoree area. 2. Prepare burn plans for high priority burn units. 	<ol style="list-style-type: none"> 1. FMAC to work with FRU to investigate potential fuel management units & determine priority burns in this region. 	2018	High	<ol style="list-style-type: none"> 1. FRU to co-ordinate burning of fuel management units in the Boomer Hills, Turners Marsh/Tippogoree area. Boomer Hill (Mt Edgecombe burn was undertaken in November 2017. A Community Bushfire Protection Plan and a Community Bushfire Response Plan was completed for Nunamara. Further burn units are planned for Boomer Hills and Tippogoree South.
Lake Leake	<ol style="list-style-type: none"> 1. Lake Leake is the catchment area for Campbelltown and has small dispersed populations at Cutting Grass Bay and Kalangadoo. 2. Population of these shack communities increases markedly in summer. 3. Communities are at risk from heavily vegetated areas to NW (at base of Ben Lomond). 4. The high proportion of private property ownership presents difficulties in carrying out controlled burning. 	Vegetated land to NW is all private. Land to the north includes Permanent Forest Timber Production Zone land as well as Snow Hill & Snowy River regional reserves.	<ol style="list-style-type: none"> 1. There is a strategic fire trail behind the township on the western shore of Lake Leake. 2. A Community Protection Plan has been produced (TFS) which covers both Lake Leake and Kalangadoo further to the south east. 	<ol style="list-style-type: none"> 1. Cross tenure burning is required to the north west of Lake Leake. 2. Hazard reduction burning is required at Kalangadoo (sthn) end of Lake. 3. Need to maintain strategic fire trail behind Lake Leake (to west of Cutting Grass Bay) 4. Investigate opportunity for Council to take action on its land. 5. Community Bushfire Mitigation Plan required for Lake Leake area 	<ol style="list-style-type: none"> 1. FMAC to work with FRU to identify key public and private blocks surrounding Kalangadoo for burning. 2. Investigate opportunities to burn selectively harvested area on private land (Badger Hill area) and the west of Lake Leake (private property known as Benham). 3. FRU to provide advice on procedures to be used when planning and undertaking burning on private property. 4. Northern Midlands Council to coordinate fire trail maintenance. 	2018	High	<ol style="list-style-type: none"> 1. 4 burn units have been identified in the Lake Leake area, including Badger Hill and Benham, currently at desktop planning stage. 2. Fire trail graded 2015 by NMC, some trees may have to be removed in future. Further work done in 2016 and 2017 by NMC, camp trail is now accessible.

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
Rossarden	<p>1. Isolated and dispersed population.</p> <p>2. Community is at risk from fire from the west and south. Community surrounded by forestry land.</p> <p>3. Lack of accessibility in the surrounding heavily vegetated & steep topography.</p>	PWS & Forestry	There is a previous history of bushfires in the area. Large scale burns have been undertaken by Forestry Tas/PWS to the NW and SE of Rossarden.	More burns have been planned in the area. If sufficient fuel reduction burning is achieved the overall risk will be reduced and the need for the preparation of a Community Protection Plan (TFS) may be delayed for a period of time.	FMAC to work with Parks, Forestry and the FRU to identify strategic burn units in this area.	Ongoing	Med	Parks and STT have undertaken large scale burns around Rossarden in Autumn 2015. Parks have a planned burn proposed for McGinties Tier within the next few years. A further burn is also being planned for Pepper Hill although there are a number of complex challenges to work through in the development of this plan. TFS have planned a burn on private land west of Castle Cary 2
Cleveland	Community is at risk from fire from the north west and west.	PWS (Crown Land) and private property	A number of wildfires have been recorded both east and west of Cleveland.					PWS have a planned burn proposed for an area of unallocated crown land adjacent to Diprose Lagoon. Planned burn proposed within the next couple of years.
COMMUNITIES								
Beaconsfield	Major hazard facility and vulnerable group (nursing home) at risk from fire from surrounding heavily wooded area to the north and west of the township.	Andersons Creek Regional Reserve & Dans Hills Conservation Area to NW, both PWS. Crown land/Beaconsfield mine to the NNW. Private land to NW.	Firebreaks west of Beaconsfield maintained by Crown Land Services. Yorktown fire burnt large areas west and north west of Beaconsfield in 2010. Salisbury Hill (south of Beaconsfield) burn completed by FT in spring 2014.	<p>1. Cross tenure burn required north west of Beaconsfield</p> <p>2. A Community Bushfire Mitigation Plan is proposed for Beaconsfield.</p>	<p>1. FMAC to liaise with Parks to identify strategic burn block opportunities.</p> <p>2. A Community Bushfire Mitigation Plan is planned for Beaconsfield</p>	Autumn 2016.	Med - High	Salisbury Hill (south of Beaconsfield) burn completed by FT in spring 2014. TFS have planned a burn on private land within the Cabbage Tree Hill area.

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
Travellers Rest	Low density urban population located in heavily vegetated area on ridge top. Potentially at risk from heavily vegetated area to the north west of them. Only one formal access/egress road in/out.	Private Freehold to the northwest and Crown Land (public reserve) along the river's edge.	Fire history unknown - nothing in last 20 years. A community bushfire mitigation plan for the area between Travellers Rest and Blackstone Heights has been completed (TFS). 4 burns have been completed from this plan.	One strategic fuel reduction burn is planned for Travellers Rest in 2018 (TFS).	FMAC to monitor completion of this burn.	2018	medium	The Community Bushfire Mitigation plan for Travellers rest has been completed (TFS). Tas Fire has completed 4 burns from this plan with one more planned for 2018.
Greens Beach	This human settlement area only ranked lowly in risk modelling but the community feels at risk/unsafe. Source of their concern is national park to the NNW (Narwantapu)	Private freehold the majority. PWS own land to the west.	Construction of fire trail between park and urban area. Public meetings were held by TFS/Parks after Beaconsfield fires some years ago to discuss actual risk.	Bushfire ready neighbourhoods program (TFS) required to educate community.	West Tamar Council facilitated a community bushfire forum for residents in 2015 - held at Greens Beach. Representatives from Tasmania Fire Service, Police, PWS and SES to discussed bushfire preparedness for the upcoming 2015/16 season. NRM North facilitated a community bushfire forum held at Greens Beach in 2017 for residents. This forum was represented by NRM North, PWS, TFS and FRU.	Ongoing	Med	In the past 10 years PWS have completed over 15 planned burn blocks within Narawntapu National Park and Briggs Regional Reserve. Planned Burn for Badgers Beach. Wentworth Hill were completed autumn 2015. Parks have a further two large planned burn units proposed over the next couple of years for Archers Knob, Badger Beach / West Head. FRU have completed a burn south and east of Greens Beach in Spring 2017
George Town area	This area includes a number of communities and assets, around George Town and Bell Bay.	Mostly private tenure with some Parks, Local Government and Taswater land	There is a history of small bushfires in this area. There have been 4 significant bushfires west of this area in the last 10 years.	A Community Bushfire Mitigation Plan is proposed for Bell Bay/George Town.	TFS are planning to develop Community Bushfire Mitigation Plan.	2018	Med	Planned burn for Bell Bay was commenced in Spring 2018. Further burns are planned for Mt George, Buffalo and Slippers Hill
VULNERABLE GROUPS								

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
Underwood	Recreational activities users (at Hollybank Tree Tops Adventures) are potentially a vulnerable group on high fire danger days. Increased visitor numbers occur during high fire season risk. Visitors potentially unfamiliar with the area and/or risk.	Hollybank Treetops Adventures Company. Surrounded by private freehold and Lady Nelson Regional Reserve (Forestry Tasmania) as well as Permanent Timber Production Zone Land.	Fire history unknown. Hollybank Tree Top Adventures have an existing fire evacuation plan.	FMAC to check and see if this group is aware of risk and adequately prepared for the arrival of a bushfire.	Investigate opportunity for strategic risk mitigation work/burning to NW to lessen risk at Hollybank.	2018	Low	<ol style="list-style-type: none"> FRU to co-ordinate investigation of potential fuel management units in Underwood area - not commenced. Regional planner has contacted Hollybank Treetops Adventure Company who are aware of risk from bushfires.
Scout Camp - Storys Creek (Rossarden area)	Recreational activities users are potentially a vulnerable group on high fire danger days, especially vulnerable to fire from the north	Storys Creek Outdoor Education Centre. Ph. 03 6385 2140	Fire history unknown.	FMAC to check and see if this group is aware of risk and adequately prepared for the arrival of a bushfire	Investigate opportunity with SFMC unit to scope out potential strategic burn blocks in this area.	2018	Low	<ol style="list-style-type: none"> FRU to co-ordinate investigation of potential fuel management units in this area - not commenced. TFS have planned a burn on private land west of Castle Cary 2
ASSETS								
Central Valley Industrial Estate	Major hazard facility at risk from fire coming from Reedy Marsh	BOC Gas/Tas Alkaloids	BOC mows boundaries and has a plan for fire <i>within</i> the plant. Meander Valley Council have developed a bushfire hazard management plan for the area.	FMAC to check and see if this group is adequately prepared for the arrival of a bushfire. Need to make this group aware of risk of fire from Reedy Marsh			Low	Meander Valley Council have developed a bushfire hazard management plan for the area. PWS are planning to burn in Reedy Marsh
Poppy crops	High value pharmaceutical crops at risk from fire.	Tas Alkaloids		Poppy crops have reduced in this region, FMAC to seek information Tas Alkaloids on rotational cropping schedule/locations if required.			Low	
Bass Link	Basslink is a high-voltage direct current (HVDC) cable link crossing Bass Strait, connecting the Loy Yang Power Station, Victoria on the Australian mainland to the George Town	Basslink Pty Ltd		FMAC to communicate with Bass Link and request maintenance of easements			Low - med	A burn is being planned (undergoing field verification) for south of Mt George through to the Bridport Road that will assist in protecting this facility.

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
	substation in northern Tasmania. Risk of fire from unmaintained easements.							
Carbon Sequestration Forests (Millers Bluff)	High value asset at risk from fire. Private forests that are maintained for the purpose of removing carbon from the atmosphere. Important for offsetting Tasmania's carbon emissions and for limiting global warming and climate change. Bushfires strongly affect the ability of these forests to store carbon.	Privately owned	Some forest plantations in the Millers Bluff area are managed for the purpose of carbon sequestration. With many decades since the last Tasmanian mega fire in 1934, forest carbon stocks are arguably high at the moment and thus at risk of significant depletion with the next mega fire.	FMAC to identify and map the location of significant carbon sequestration forestry assets within the FMA.	FMAC	ongoing	Low	TLC will assist TFS in identifying Carbon Sequestration forests within the FMA.
Aboriginal Heritage	The location of places/artefacts of Aboriginal cultural significance at risk from fire within the FMA have not been fully investigated.	Tasmanian Aboriginal Centre (TAC) and Aboriginal Heritage Tasmania.	N/A	Liaise with Aboriginal Heritage Tasmania to determine any items/places at risk within the FMA	The location of any places/artefacts requiring protection from fire within the FMA should be incorporated into mitigation and burn planning	Ongoing	Medium	FRU now have a procedure in place to identify places and artefacts of Aboriginal cultural significance in areas identified for treatment.
Reduce bushfire risk to primary production	Raise awareness of bushfire risk mitigation programs within context of key primary industries, to better deliver burns and other risk management activities in areas where they operate	<input type="checkbox"/> livestock <input type="checkbox"/> fencing <input type="checkbox"/> aquaculture <input type="checkbox"/> horticulture <input type="checkbox"/> viticulture <input type="checkbox"/> apiculture		Engagement with specific peak bodies begun, to continue through 2017 and 2018	TFS Fuel Reduction Unit Community Engagement Section	ongoing	high	a) TFGA: Community forums during 2015-6, field days in early 2017 (in planning stages 2016) b) Wine Tasmania: Smoke taint field days occurred in 2017, ongoing liaison and engagement with industry. c) Apiculture: Liaison with beekeepers during summer 2015-6
POTENTIAL BURN BLOCKS/STRATEGIC AREAS								

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
Tippogoree range	Range on the eastern side of the Tamar needs some hazard reduction burning	Cross tenure burning required	Unknown	FRU to continue mitigation planning for Tippogoree range area. Tippogoree South Mitigation Plan completed, Tippogoree North not yet started.	FMAC to work with FRU to investigate potential fuel management units & determine priority burns in this region		high	<ol style="list-style-type: none"> FRU to co-ordinate burning of fuel management units in Tippogoree range area. A burn is currently planned for Hillwood, west of the East Tamar Highway. Further burns are planned for Jollys Rd and Magazine Rd area.
Underwood, Nunamara & Boomer Hills	At risk from fire originating in Rocherlea/Ravenswood	Cross tenure burning required	Unknown	<ol style="list-style-type: none"> Continue mitigation planning for Boomer Hills area. Prepare burn plans for high priority burn units. 	FMAC to work with FRU unit to determine priority mitigation activities and/or strategic burn units in the Rocherlea/Ravenswood and Boomer Hills area.		High	<ol style="list-style-type: none"> FRU to co-ordinate burning of fuel management units in the Underwood, Nunamara and Boomer Hills area BPP has completed a Community Bushfire Mitigation Plan for Launceston's northern suburbs, burning of units commenced in spring 2015 and continued into 2016. First Boomer Hills burn was undertaken in Spring 2017 Community Bushfire Protection and Response Plans completed for Nunamara in 2017 Further burn units planned for Tippogoree South and Boomer Hills.
Reedy Marsh area	Although outside Tamar Fire Management Area, a fire in this area will impact on Tamar FMA	PWS, private, FT and TFS	Unknown	Investigation of potential burn blocks is required (in conjunction with Central North FMAC)	FMAC to work with FRU unit to determine priority mitigation activities and/or strategic burn units in the Reedy Marsh area.		medium	PWS have completed planning a burn for Reedy Marsh, burning is proposed for autumn 2018.
West of Riverside	Fires originating in this area will impact on Trevallyn	Cross tenure burning required	Unknown	Investigation of potential burn blocks is required. Community Bushfire Mitigation Plans are proposed for Stephensdale/Ecclestone and	FMAC to work with FRU unit to determine priority mitigation activities in the West Riverside area.	2018	high	<ol style="list-style-type: none"> FRU to co-ordinate investigation of potential fuel management units in the area west of Riverside Burn units identified in grassy hut tier area up

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
				Riverside/Trevallyn areas.				to Ecclestone Rd 3. Over the past 10 years PWS have completed 11 FRB's within the Trevallyn Nature Recreation Area. An additional burn block within this reserve is proposed for Autumn 2018.
Bridgenorth Area	Large scale fires originating within the forested area surrounding Bridgenorth have the potential to impact on communities to the south east, including Riverside, Blackstone Heights and Travellers Rest.	Cross tenure burning required	No recent records of bushfire originating in the area.	1. A Community Bushfire Mitigation Plan is proposed for Exeter/Grindelwald 2. Investigation of potential burn blocks within the forested area between Travellers Rest and Bridgenorth is required.	2. FMAC to work with FRU unit to determine priority mitigation activities and/or strategic burn units in the Bridgenorth area.		high	FRU to co-ordinate investigation of potential fuel management units in Bridgenorth area – 2 units in Grindelwald identified, one burnt in 2016, one planned for 2018.
City of Launceston Bushland Reserves (34 reserves across the LGA including Cataract Gorge, Punchbowl, Carr Villa, Lilydale Falls and Myrtle Park)	Many of these reserves are in an urban landscape close to significant values.	City of Launceston	Council has ongoing planned burning program, operating since 1997.	Continue to implement program each burning season	TFS to continue to assist Council with this program	ongoing	high	Council completed 7 burns in 2017, 8 more burns are planned for 2018 9 bushfire management plans were completed in 2017
Launceston NE suburbs Newnham Creek Area (Ravenswood) & rail line at Mayfield and Tamar River	Outlying bush surrounding Ravenswood and Mayfield in Launceston is subject to repeated small arson events each fire season. The purpose of these planned burns is to provide strategic advantage to prevent fires	Private property and Council land.	These locations are subjected to repeated small arson events each summer	TFS to burn linear strips of bushland south of Mayfield and north east of Ravenswood in an attempt to reduce the spread of wild fires from known arson ignition locations.	TFS volunteer brigades and professional officers to work together to conduct this fuel reduction burning.	ongoing	high	1. TFS has completed a series of burns in the Ravenswood/Mayfield area designed to provide some defence against ongoing nuisance arson fires in this area (ongoing). 2. TFS has completed a Community Bushfire Mitigation Plan (2015) to guide this burning.

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
	spreading & impacting on properties to the south east. In addition areas inside the suburbs such as Heritage Forest are repeatedly lit.							<p>3. PWS in partnership with the City of Launceston have a cross tenure burn planned for Bouchers Creek Conservation Area and Russells Plains proposed for Autumn 2018</p> <p>4. PWS have a planned burn proposed for the Native Point Nature Reserve between Windermere and Swan Bay. This block is planned to be targeted in Autumn 2018.</p>
Powranna (feedlot)	Powranna feedlot is a potential strategic area. Located east of the Midlands Highway, south of Perth.	Tasmania Feedlot Pty Ltd	N/A	Include this area in future strategic area mapping.	Include this area in future strategic area mapping.	2018	Low	DSG undertakes regular slashing of roadsides
George Town Council coastal area	The coastal area including Beechford, Lefroy, Stony Head, Lulworth, Weymouth and Bellingham was raised as an area of concern by the FMAC.	Mixed tenure	There have been 4 significant bushfires in this area in the last 10 years.	Consider this area for future mitigation planning	FRU to implement, liaison with Stony Head Artillery Range for Defence Department land is required.	2018	High	<p>A mitigation plan for this area has been completed and burn units for the Weymouth area have been planned. 3 burns were completed in spring 2016 by PWS and TFS with another burn completed in 2017. The DOD have burns planned for the 2017/2018 season. PWS have identified four burn units within the Lefroy Regional Reserve and adjoining crown land, three being north of the Lefroy Township and one north of Pipers River off the Weymouth Road.</p> <p>Two of these blocks have been proposed to be targeted this Spring 2017 with a further block proposed for Autumn 2018.</p>
FIRE TRAILS								

Location	Issue	Owner/responsibility	Previous Treatment	Action required	Project implementation	Timeframe for completion	Overall FMAC Priority rating	Activity/Status
Strategic Fire Trails within Tamar FMA	Strategic fire trails are trails or roads that due to their location relative to the actual or likely path of a fire and connectivity to other trail networks have the potential to provide an advantage for the purposes of fire management and control operations. A map indicating strategic trails within the FMA would benefit future fire mitigation and bushfire response planning.	Multiple tenures.	Forico have an ongoing annual maintenance program for trails on their land.	DPIPWE map data is available to FRU mapping systems and is constantly updated.		ongoing	High	PWS recently completed fire trail maintenance works across a large proportion of strategic trails within the Trevallyn Nature Recreation Area within the Launceston/West Tamar municipality, funded through the Tasmanian Bushfire Mitigation Grants Program.
Beechford, Lulworth, Weymouth, Bell Buoy Beach	Progress Associations are assisting with voluntary slashing/maintenance of trails	Local Council	Slashing	Slashing	Investigate fire mitigation options for this area.	ongoing	Medium	Fire breaks have continued to be maintained. Burns have been completed and are planned for various location along this coastal area
Beaconsfield	Crown Land Services maintain selected firebreaks west of Beaconsfield	Crown Land Services	Slashing		Investigate Fuel Reduction Burning options for this area.	ongoing	Medium	Fire breaks have continued to be maintained. A burn is planned for Cabbage Tree Hill in 2018

Appendix 14 – Annual Implementation Program Progress Charts Tamar FMA

Proposed Burns for 2018

Location	Planning area	Proposed mitigation activity	LGA	Tenure	Contact Details	Schedule	Desktop Planning	Approvals	Pre-burn fireground preparation	Awaiting Weather Window	Partially Completed	Burning Completed
Underwood, Nunamara & Boomer Hills	Boomer Hills	Planned burning commenced in 2017, more burns planned for 2018	Launceston	Private	TFS							

Lake Leake	Cross tenure burning is required to the north west of Lake Leake	Areas identified for burning	Northern Midlands	Private & Crown	TFS						
Rossarden	Areas surrounding the town	Further fuel Reduction burns are planned to the NW and SW of Rossarden		STT and PWS	STT and PWS						
Cleveland	Area west of the community	Fuel reduction burn planned West of the Cleveland		PWS	PWS						
Beaconsfield	Wooded areas to the W and NW of the township	Cross tenure burn required west and north west of Beaconsfield		PWS and private	PWS and private						
Travellers Rest	Private land between Travellers Rest and Blackstone Heights	Further strategic burns are planned between South Esk River and Travellers Rest		Private freehold and crown land	TFS						
Greens Beach	Narwantapu to NNW of Green Beach	Wentworth Hill burn was completed autumn 2015. Badger Beach / West Head burn is in desktop planning stage. Greens Beach East completed in 2017		PWS and private freehold	PWS						
Scout Camp	Storys Creek (Rossarden area)	Further fuel Reduction burns are planned to the south of Storys Creek		PWS	PWS						
Tippogoreee Range		Range on the eastern side of the Tamar needs some hazard reduction burning – Hillwood is planned for 2018		Mixed - private and public	TFS						
Reedy Marsh area	Reedy Marsh	Burn planned for autumn 2018		Mixed - private and public	PWS						
West of Riverside	West of Riverside	FRB Trevallyn NRA Planning required for this area		Public	PWS						
Bridgenorth Area	Grindelwald	Burn completed in 2016		Mixed - private and public	TFS						
Launceston NE suburbs and Tamar Valley	Newnham Creek Area (Ravenswood) and Rail line at Mayfield	Spring 2015 burns completed, further burns are planned for 2016. FRB Bouchers Creek and Native point planned for Autumn 2018		Private	TFS						

City of Launceston Bushland Reserves	All land identified in COL Fire Management plans	Undertake burns as per program	City of Launceston	Local government and crown	City of Launceston 63233000						
George Town Council coastal area	Beechford to Weymouth	3 PWS burns planned for 2017/2018 in the areas of Lefroy and Pipers River Burns planned for 2018 by TFS on private land		Mixed - private and public	TFS and PWS						