



Fire Management Infrastructure Categories and Standards

Asset Services Oct 2011 (V4)



Parks and Wildlife Service

Fire Management Infrastructure Categories and Standards

Progress summary and document circulation

Actions	Author	Comments	Completed
Concept Meeting Feb 2008, Attending; Adrian Pyrke, Brian Campbell, Steve Summers, David Taylor, Phil Duggan, Phil Wyatt and Leigh Douglas Apologies; Chris Irvine, Paul Black	Brian Campbell compiled notes from first meeting	Circulated to meeting attendees	Feb 2008
Original, Version 1	Brian Campbell & Phil Duggan	Steve Sallans and Adrian Pyrke	June 2008
Version 2 October 2008, general review incorporating input from David Taylor (nominated by Adrian Pyrke)	Brian Campbell & David Taylor	Fire Management Section and Regional Fire Management Officers & Fire Operations Officers	Nov 2008
Version 3 January 2008, minor changes to naming convention for Fire assets	Brian Campbell	Regional Fire Management Officers & Fire Operations Officers to implement and report to a progress meeting March 2009	Jan 09
Version 4 January 2011, (current version)	Brian Campbell & David Taylor	To be presented to Forestry and Tas fire for peer group review	Oct 2011

Summary

This document sets a tiered range of fire management infrastructure categories and standards for vehicular access fire trails and fuel modified buffer zones. The categories define the assets required standards, vehicle suitability and provides for the development of maintenance schedules appropriate to maintaining standards.

The extent of PWS fire infrastructure responsibility at the time of developing these categories and standards were not fully represented in any centralised PWS managed system. A total of 124 fire trails and 31 fuel modified buffer zones (more often referred to as fire breaks) were captured in the Parks and Wildlife Service Information Management System (PIMS) in Dec 2008. Based on local knowledge these figures are likely to increase when a full asset capture is completed.

The need to have current and accessible information for fire infrastructure initiated the development of these categories and standards.

The information obtaining to the assets referred to in this document is required to be recorded in PIMS. The system provides for the recording of a range of asset categories and asset information that can be analysed and reported, at a range of management levels. The PIMS Works Module provides for full life cycle maintenance programs to be scheduled and tracked. PIMS is the PWS recognised asset management system and ensures that corporate information is retained and readily available for future managers.

Illegal use and misuse of fire trails is common and results in increased and unplanned maintenance requirements. Currently information on all trails, tracks and roads whether trafficable or not are readily available from general tourist map publications. This implies to the general public that these trails and tracks may be part of a greater tourism road network and trafficable. The implementation of these asset categories provides a platform for the PWS to develop agreements with Tasmans to have only public use roads, walking tracks and permit trails available on selected tourist publications. Ensuring that fire trail maintenance is minimised and focused. Strategic fire management infrastructure information will be improved and will continue to be provided to emergency services to support critical incident management such as wildfires and search and rescue.

The naming of fire trails will assist with the safety of personnel on the fire ground, providing information to incident management teams and on ground users of expected trail conditions and vehicle suitability i.e. a Class 5 fire trail is suitable to the more capable vehicles of class 5 & 6.

Review and Capture of Fire Management Infrastructure Assets

Implementation of these new asset categories will require the assessment of fire infrastructure assets currently recorded in PIMS and the physical capture of additional assets and assigning them to appropriate categories. PWS Regional Fire Operations Officers are to undertake the lead role with assessment and capture of assets with the assistance of Regional Fire Management Officers and Regional Asset Coordinators.

All existing trails which appear on 1:25k maps will need to be captured and assigned to separate categories in PIMS:

- Roads - Class 1 to 5 open to public access or management only (defined in IMS under Availability)
- Walking tracks - Class 1 to 7
- Permit Trails - Horse, Bike, 4x4, etc
- Fire Trails Class 1, 3, & 5
- Redundant Trails – Closed, rehabilitated or naturally rehabilitating

Fire trails are to be captured as tracks (GPS) and displayed in PIMS as lineal assets (polylines), the GIS measuring them in kilometres. Fuel modified buffer zones are to be captured as an area and will be displayed in PIMS as area (polygons), measured in hectares. Where assets e.g. fire trails have multiple uses the assets are to be captured and recorded for each use and will be displayed as parallel polylines or a cluster of polygons, e.g. a multi use fuel modified buffer zone (fire break) may be displayed as two polygons, a hand managed and machine managed component with the addition of lineal polylines for a fire trail, a walking track and a horse trail. This separation of use is required to report on: the various recreation opportunities provided by the PWS, full life cycle costing of assets and to schedule appropriate level of maintenance.

Only fire trails identified in Fire Management Plans or Regional Strategic Fire Management Plans are to be categorized as Fire Trails. All other roads and trails are to be categorized as roads - class 1 to 5 (Forest Practices Code Categories) as management only or public access.

Asset inspections will be required to determine asset condition and where an asset falls below the category standards the asset condition field in PIMS is to be updated with a new asset condition entry and information added to condition notes identifying the substandard characteristics of the trail.

Where a Fire Trail is required in a Management Plan and the asset falls below the category standards required in the plan, Works 'tasks' are to be added to the asset in the Works Module to reflect the upgrade requirements. This information will ensure all fire infrastructure upgrade resource requirements are in context for the preparation of funding submissions.

Naming of Fire Infrastructure

Fire Trails,

Where an asset has a nomenclature gazetted name this is to be used. Where no gazetted name exists, naming will be through linking abbreviations of key information e.g. Reserve code (ref [Burn Unit naming, Appendix C](#)), fire trail class number and allocated trail number working clockwise from North (3 digits), followed by FT (fire trail).

Fuel Modified Buffer Zones,

Naming will be through linking abbreviations of key information e.g. Reserve code (ref [Burn Unit naming, Appendix C](#)), allocated FMBZ number working clockwise from North, Machine or Hand Managed, Size (5m).FMBZ (Fuel Modified Buffer Zone).

Do not duplication numbers between trails and FMBZ within a single reserve.

Examples:

Meehan Range Nature Recreation Area - Fire Trail = MRNRA 5001FT

Conningham Nature Recreation Area - Machine Managed <5 meters wide
= CONRA014FMBZ (*MM-5m*)

Terms

Terms and standards used in this framework are taken from the Guidelines for Development in Bushfire Prone Areas of Tasmania by the Tasmanian Bushfire Planning Group formed in 1998

Access - provides safe entry and exit for fire brigade and other vehicles to a building. Access includes roads, fire trails, entrances and driveways. *In the context of PWS access may also provide entry and exit to a range of assets which may be built structures or areas of natural values. Tasmanian Fire Management Authorities use a range of vehicles with varied capabilities. Safe access depends on appropriate use of vehicles and matching vehicles to trail condition and local terrain. PWS fire trail categories and naming provides managers, incident management teams and on ground users of vehicle suitability and expected trail conditions.*

Building Protection Zone - is the area between the building and fuel modified buffer zone, where fine fuels are maintained in a minimum fuel condition.

Bushfire Prone Area - is land with standing vegetation one hectare or larger in extent or land within 100 meters of an area of standing vegetation of one hectare or larger.

Fine Fuel - is grasses, bracken, dead or fallen materials such as leaves, bark, twigs and branches up to 6 millimeters in diameter.

Fuel Modified Buffer Zone (FMBZ) - is the area between the building protection zone and the bush or standing vegetation where fine fuels are maintained in a minimum fuel condition.

Minimum Fuel Condition - is where fine fuels are minimised to the extent that the passage of fire will be restricted, e.g. short green lawn, paths, and drives.

Standing Vegetation - means all forms of vegetation as well as re-growth after clearing, all plantations and other continuous vegetation in the form of trees and scrub that grows to a height greater than 2 meters.

	Parks and Wildlife Service Managed Vehicular Fire Trail Categories			
	These categories are for strategic fire trails that are not for public vehicle use and are for fire management purposes only, PWS managed public roads and management only access roads are categorised separately. Fire trails are created to provide access to buildings or natural value assets that would normally be inaccessible by vehicle, limiting fire fighting response.			
Fire trail categories	Class 1	Class 3	Class 5	Redundant
Naming Requirements for PIMS	Reserve Code, Class 1, Trail Number (3 digits)FT	Reserve Code, Class 3, Trail Number (3 digits)FT	Reserve Code, Class 5, Trail Number (3 digits)FT	Reserve Code, (<i>Redundant Trail</i>), add name (if known) to asset details only
Summary	high standard access, (emergency egress roads) hardened all-weather surfaces	all weather 4x4 access suitable for larger vehicles	dry weather 4x4 access, suitable for Class 5 vehicles in dry weather condition	rehabilitated or naturally rehabilitating trails, generally not to be re opened unless for the control of wildfire
Vehicle suitability	class 1-3-4-5-6	class 3-4-5-6	class 5-6	nil vehicle access without upgrading
Vehicle type	2 wheel drive	4 wheel drive	4 wheel drive	nil vehicle access without upgrading
Surface	hardened all weather constructed surface	all weather with 4x4 capability	dry weather with 4x4 capability	rehabilitated or naturally rehabilitating
Conditions	surface may be gravel hardened	subject to some wheel ruts that when wet may be boggy for short lengths	subject to many wheel ruts that when wet may be boggy for extended lengths	rehabilitated or naturally rehabilitating
Minimum trafficable width	min 6m may include hardened drained shoulders of < 3 degrees	min 4m may include hardened drained shoulders of < 3 degrees	min 4m may include hardened drained shoulders of < 3 degrees	NA
Track cleared width	min 10m	min 8m	min 6m	NA
Track cleared height	min 4m with non continuous over head vegetation	min 4m with non continuous over head vegetation	min 4m with non continuous over head vegetation	NA
Desirable max gradients	±7 degrees normally not exceeded	±7 degrees may be exceeded for short lengths	±10 degrees may be exceeded for short lengths	NA
Curves	min inner radius of 10m	min inner radius of 10m	min inner radius of 10m normally not exceeded	NA
Cross fall	±2 degrees normally not exceeded	±2 degrees normally not exceeded	±2 degrees may be exceeded for short lengths	NA
Vehicle passing	may be single or duel lane	single lane with passing bays	single lane with passing bays	NA
Max space between passing bays	will have many opportunities for passing, 180m max space between bays	provided to maintain visual contact where possible, 200m max space between bays	provided to maintain visual contact where possible, 200m max space between bays, extras at intersections and steep terrain	NA
Vehicle passing bays	min 20m long 8m wide	min 20m long 8m wide	min 10m long 6m wide	NA
Bridges	Must be constructed to a min capacity of 20 tonnes		min capacity of 10 tonnes with fords for heavy equipment	NA
Turning Areas	circular turning area with min carriageway of 10m, may include hardened drained shoulders of < 3 degrees, For 'Y' or 'T' turning bay min 4m width and 8m length			NA

Fuel Modified Buffer Zones (FMBZ)

Fuel Modified Buffer Zones are created to provide defensible space from bushfires. They can be made up of both, building protection zones and fuel modified buffer zones.

Building protection zones are directly adjacent to buildings and ideally have a significant amount of fuel reduction so as there is little to no material available to burn around the building when a bushfire approaches. These areas are to be maintained in a minimum fuel condition and are often made up of short green lawns, paths and drives. For newly constructed buildings a building protection zone is required when in a bushfire prone area. Older buildings often have little to no building protection zones potentially rendering them un-defendable when a bushfire approaches.

The building protection zone is primarily the responsibility of the land owner and is ideally within the property boundary; often the currently required standards for building protection zones extend into the neighbouring property containing the standing vegetation i.e. land managed by PWS. Where the private property owner is unable to manage the building protection zone or a fuel modified buffer zone within their boundary the PWS may, subject to priorities and resources manage these zones for the protection of the private property. Building protection zones and fuel modified buffer zones for PWS managed assets will be managed on a strategic and prioritised base.

A fuel modified buffer zone is the area between the building protection zone and the bush or standing vegetation where fuel is maintained in a fuel reduced condition. Fuel modified buffer zones within the context of PWS are commonly referred to as fire breaks and have predominantly been managed through annual tractor slashing. Where tractors have been unable to access or a more sympathetic approach required, hand slashing has been undertaken. To support the introduction of new terminology and for determining total life cycle costs and resource requirements fuel modified buffer zones (FMBZ) have been divided into two categories, Machine Managed (FMBZ-MM) and Hand Managed (FMBZ-HM).

	Parks and Wildlife Service Managed Fuel Modified Buffer Zone (FMBZ) Categories					
	Fuel Modified Buffer Zones are generally selectively cleared areas maintained in a fuel reduced condition through mowing, slashing, raking, burning and the removal of ladder fuels up to a height of 2 meters. Larger trees are retained to trap embers and reduce wind speeds. Trees are generally retained separated by open space; some clumping of small trees may be retained. A Fuel Modified Buffer Zone may be made up of tractor slashed (MM) and/or a hand slashed or burnt area (HM) and supported by a vehicular fire trail.					
	Fuel Modified Buffer Zones, Machine Managed					
FMBZ category title	Reserve Code, Number (3 digits) FMBZ-MM5m	Reserve Code, Number (3 digits) ,FMBZ-MM10m	Reserve Code, Number (3 digits) ,FMBZ-MM20m	Reserve Code, Number (3 digits), FMBZ-MM30m	Reserve Code, Number (3 digits), FMBZ-MM40m	
Vegetation modified width	5m ± 2.5m	10m ± 2.5m	20m ± 2.5m	30m ± 2.5m	> 40± 2.5m	
Fuel levels (grassed areas)	short cropped grass maximum of 200mm high within fire season unless otherwise specified in a Fire Management Plan					
Fuel level (ladder fuels)	removal of fuel between the ground and the bottom of the tree canopy to a height of not less than 2 meters, unless otherwise specified in a Fire Management Plan					
PPIMS asset naming requirements	naming will be through linking abbreviations of key information e.g. Reserve code (ref Burn Unit naming, Appendix C), Fuel Modified Buffer Zone (FMBZ), <u>M</u> achine <u>M</u> anaged, Size (5m), allocated FMBZ number working clockwise from North. Do not duplication numbers between trails and FMBZ (machine or hand managed) within a single reserve.					
	Fuel Modified Buffer Zones, Hand Managed					
FMBZ category title	Reserve Code, Number (3 digits), FMBZ-HM5m	Reserve Code, Number (3 digits), FMBZ-HM1Mm	Reserve Code, Number (3 digits), FMBZ-HM20m	Reserve Code, Number (3 digits), FMBZ-HM30m	Reserve Code, Number (3 digits), FMBZ-HM40m	
Vegetation modified width	5m± 2.5m	10m± 2.5m	20m± 2.5m	30m± 2.5m	40m± 2.5m	
Fuel levels (grassed areas)	short cropped grass maximum of 200mm high within fire season unless otherwise specified in a Fire Management Plan					
Fuel level (ladder fuels)	removal of fuel between the ground and the bottom of the tree canopy to a height of not less than 2 meters, unless otherwise specified in a Fire Management Plan					
Suggested naming	naming will be through linking abbreviations of key information e.g. Reserve code (ref Burn Unit naming, Appendix C), Fuel Modified Buffer Zone (FMBZ), <u>H</u> and <u>M</u> anaged, Size (5m), allocated FMBZ number working clockwise from North. Do not duplication numbers between trails and FMBZ (machine or hand managed) within a single reserve					

Note: FMBZ include what is commonly been referred to as ‘Fire Breaks’

Required Widths for Fuel Managed Areas

Slope	Building Protection Zone (measured from the external walls of the buildings in meters along the ground)	Fuel Modified Buffer Zone (measured from the Building Protection Zone in meters along the ground)		
		Grassland	or	Forest
Flat	20	10	or	15
5 degrees	20	15	or	25
10 degrees	25	20	or	30
15 degrees	30	30	or	45
20 degrees	40	40	or	50

Fire Water Source

The classification of water source and water access use the Forestry guidelines without change.

Characteristic Access	Description	Code
H	Helicopter	
A	Articulated Bulk Water Carrier	
M	Medium Tanker Class 3-4	
L	Light Tanker Class 5-6	

Volume		
1	Greater than 500,000 litres	
2	Greater than 50,000 litres & less than 500,000	
3	Less than 50,000	

Reliability		
A	Permanent running water	
B	Retains water when SDI exceeds 100	
C	Dries up when SDI exceeds 100	

E.g. Symbols on a typical Water Sign Post

W 23 ----- Water Sign and water source number

H ----- Helicopter Access

M ----- Medium Tanker Access

2 ----- Volume of Water

A ----- Reliability

Inspection and Maintenance Programs

All assets will be required to be assigned a maintenance program within the PIMS works module based on the reliability requirements of the PWS. Assets are to be allocated a level of strategic significance and recorded in the PIMS to identify the reliance levels and therefore the maintenance levels required to maintain standards.

Regional Fire Operations Officers are to undertake the lead role with the development of inspections and maintenance schedules to ensure that fire trails and fuel modified buffer zones are managed and maintained at the standards as defined in the asset categories. Regional Fire Operations Officers and Regional Asset Coordinators are to provide support where required.



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