Strategic Fire Management Plan

for the

Meehan Range Region

APPENDICES

December 2006

Appendix A

Management Procedures (MPs)

1. Emergency vehicle access route construction
2. Emergency vehicle access route inspection and maintenance
3. Trail closure and rehabilitation
4. Construction and maintenance of stored water supplies
5. Prescribed burning
6. Weed control before and after burning
7. Coordinating fire management activities
8. Recording wildfires
9. Recording fire management activities
10. Planning guidelines for developments
11. Post-wildfire safety and rehabilitation
12. Private property access protocol

MP 1 EMERGENCY VEHICLE ACCESS ROUTE CONSTRUCTION

Objective

To provide guidelines for construction of emergency vehicle access routes to ensure that they:

- are safely trafficable by Tasmania Fire Service vehicles (light, medium and heavy tankers)
- can be used as fire control lines for wildfire suppression and prescribed burning.

Application

This MP can be used for all trails constructed on the Meehan Range for the primary or secondary purpose of providing emergency access for Tasmania Fire Service vehicles.

This MP is also intended to provide reference guidelines for the up-grading and maintenance of existing trails that have been designated as emergency vehicle access routes, or are likely to be required for Tasmania Fire Service vehicle access.

This MP is not intended for trails that have unrestricted public access, or are likely to receive frequent usage.

These are general guidelines only, and may need to be varied to suit particular conditions.

Dormant trails will need to be initially constructed to these guidelines but can be blocked off and allowed to vegetate over between uses.

Guidelines

LOCATION

a) Fit the trail to the topography wherever possible so that alterations to the natural features will be minimised.

b) On broad-topped ridges and plateaux, locate trails at least 50 m from the break-of-slope wherever possible.

c) Avoid dead-end trails wherever possible.

d) Where a dead end cannot be avoided, it should be provided with a turn-around, or loop, of minimum 25 m diameter so as to allow for continuous forward motion of fire service vehicles.

e) Avoid areas of dense vegetation that accumulate heavy fuel loads.

CONSTRUCTION

a) High priority emergency vehicle access routes should be of formed, all weather construction.

b) Pavement width should be at least 4 m (absolute minimum 3.0 m for short distances on straight sections). Shoulder width should be a minimum 0.5 m.

c) Minimum 2 m clearance each side of the centre line (absolute minimum 1.5 m for short distances on straight sections).

d) 4 m vertical clearance to any obstructions above the trail surface.

e) Gradients in excess of 15% should be avoided. Short sections of steeper gradients can be used to negotiate topographic difficulties, but consideration should be given to appropriate surfacing to ensure the trail surface is stable, and heavy vehicles will not loose traction.

f) Dips should have no more than a 1 in 3.7 (27%) entry and exit angle.

g) Curves should have an inner radius of 10.0 m or greater.

h) Structures such as culverts and bridges should have a load capacity of at least 20 tonnes.

i) Single lane trails should have passing bays 2 m wide by 20 m long at least every 200 m making a total road width of 6 m within the passing bay.

j) A minimum 2 m wide strip on each side of the trail should be cleared of shrubs, bushes and other undergrowth unless the trail is a component of a wider fire break. Plant species listed in the Threatened Species Protection Act, 1995, should not be removed without a permit.

k) Average travel speed of 15 km/hr for high and medium priority trails.

l) Material used for trail construction must be from areas free of weeds.

m) Material used for trail construction must be sourced from a confirmed *Phytophthora cinnamomi* free source.

DRAINAGE

a) Watercourse crossings should be stabilised by use of bridges, culverts, or fords lined with concrete or coarse rock as appropriate.

b) Outfall drainage at an approximate grade of 3% should be provided on all sections of trails, except where:

- fill batters are unconsolidated and likely to erode
- fill batters exceed 1.5 m in height.

In these situations use infall drainage, table drains, culverts or gravelled water crossovers, and batter drop down drains.

c) Cross banks should be installed on steeper slopes to divert runoff to the downslope side of the trail, or into stable table drains (see Figure 1). Cross banks should be constructed at a slight angle to the trail with a grade of approximately 5%. Cross banks should be spaced according to the erodibility of the soil on which the trail is constructed. See Table 1 for cross bank spacing, and Table 2 for soil erodibility classes.

Figure 1 - Dimensions of Cross Banks (from DLWC, 1994)

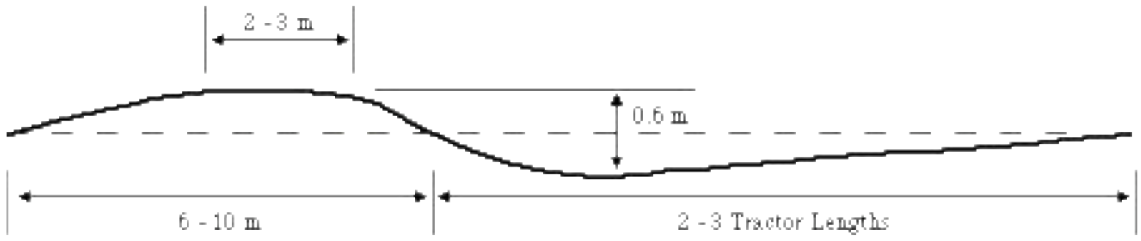


Table 1 - Cross Bank Spacing

TRAIL GRADIENT	SOIL ERODIBILITY CLASS		
	Low to Moderate-High	High	Very High
up to 15%	70 m to 90 m	60 m to 70 m	20 m to 30 m
15% to 20%	60 m to 70 m	50 m to 60 m	*
20% to 25%	40 m to 60 m	*	*

* Trails should be sealed, and table drains lined to control erosion

Table 2 - Soil Erodibility Classes (from Forestry Commission Tasmania, 1993)

SOIL ERODIBILITY CLASS [1]	SOIL - PARENT ROCK - FOREST TYPE
Low	Soils from dolerite[2] or basalt. Soils from siltstone, mudstone or slates carrying wet forest. Soils with high clay or organic matter content from granite, sandstone, limestone or dolomite carrying wet forest.
Moderate	Soils from siltstone, mudstone or slates carrying dry forest. Soils from sandstone, limestone or dolomite carrying wet forest. Sandy soils from granite carrying wet forest.
Moderate - High	Loamy and clayey soils from sandstone, limestone or dolomite carrying dry forest.
High	Soils from quartzites or coarse sandstones. Soils from granite carrying dry forest.
Very High	Sandy and gravelly soils from granite or sandstone carrying dry forest. Weakly consolidated alluvium, colluvium, sands or glacial deposits from sedimentary rocks.
1 - Erodibility class is based on soils with few or no stones. Stony soils (over 20% stones) should be decreased one class from the appropriate rating shown. 2 - Except the relatively rare grey-brown dolerite soils carrying dry forest, which are highly erodible.	

Sources

DLWC (1994) *Guidelines for the Planning, Construction and Maintenance of Tracks.* Department of Land and Water Conservation, Sydney.

Elton D. (undated) *Environmental Guidelines for Tracks and Roads.* Department of the Environment, Hobart.

Forestry Commission Tasmania (1993) *Forest Practices Code.* Forestry Commission Tasmania, Hobart.

Rudman T., Tucker D, and French D. (2004) *Tasmanian Washdown Guidelines for Weed and Disease Control*. Edition 1. Department of Primary Industries, Water and Environment, Hobart.

Tasmania Fire Service (2005) *Guidelines for Development in Bushfire Prone Areas of Tasmania.* Tasmania Fire Service, Hobart.

MP 2 EMERGENCY VEHICLE ACCESS ROUTE INSPECTION AND MAINTENANCE

Objective

To ensure that all designated emergency vehicle access routes on the Meehan Range are trafficable by Tasmania Fire Service vehicles at all times during the bushfire danger period, and pose a minimal risk to the environment through erosion and sedimentation.

Application

- This MP can be used for all designated emergency vehicle access routes on the Meehan Range.
- This MP is not intended for trails that are open to unrestricted use by the public, or are likely to receive frequent usage.

Guidelines

INSPECTION TRIGGERS

All high and medium priority emergency vehicle access routes should be inspected:

- at the beginning of the bushfire danger period (October)
- as soon as possible after heavy rainfall sufficient to cause substantial runoff
- as soon as possible after wind storms likely to have blown over trees, or brought down large branches.

A particular emergency vehicle access route should be inspected and any necessary maintenance carried out following a complaint, or notification of damage, from a landowner.

INSPECTION ITEMS

The following seven items should be checked during each trail inspection:

a) Surface: wherever possible high and medium priority trails should have a smooth surface free from loose stones and rough exposed rock (except for cross banks for erosion control, and rock lined fords). It should be noted that a smooth surface may not be achievable on all sections of all trails without importing substantial amounts of surfacing materials.

b) Erosion: trails should be free of rilling or gullying caused by water flowing across or along the trail.

c) Water on trail: where water has been running along the trail, adequate arrangements must be made for it to be turned off the trail.

d) Drainage: all table drains, cross banks, fords, culverts and bridges should be functioning and free of erosion damage or blockages.

e) Trees or branches across the trail: fallen trees or branches should not be allowed to block trails, even where it is possible to manoeuvre a vehicle around them. They should be moved well back from the edge of the trail. Where there are heavy accumulations of fuels adjacent to trails, fallen trees and branches should be removed completely.

f) Shrubs and bushes on the sides of the trail: there should be no shrubs, bushes or small trees within 1 m of either side of the trail. The clearing width can be reduced in areas where fuel loads are naturally relatively low, or where threatened plant species occur along the side of the trail.

g) Gates and locks: gates should be intact and able to be opened and closed easily, locks must be easy to open.

MAINTENANCE

Note that the use of emergency vehicle access routes when they are wet and soft must be minimised to reduce damage and subsequent maintenance costs.

a) Where the trail surface has been damaged by water running down the trail, excessive usage etc., regrade the trail with a 4WD tractor with a rear mounted blade, or other suitable equipment. Blade gravel in from the side of the trail to fill in holes and ruts. Back blade to ensure the trail has a smooth surface and sufficient cross-fall (preferably outfall) to shed water. If there is insufficient material available on the sides of the trail for repairs, import suitable material. In weed infested areas ensure that blading is done into, not out of, weed infestations.

b) Material used for trail maintenance must be from areas free of weeds, and any material imported into the area for trail maintenance must be sourced from a confirmed *Phytophthora cinnamomi* free source.

c) Where excessive erosion has occurred, or it is not possible to provide adequate cross-fall drainage, install additional cross banks to direct water to the side of the trail.

d) Remove any accumulated sediment, leaves, branches or other litter that is blocking table drains or culverts.

e) Repair cross banks that have been overtopped, blocked up with sediment, or are badly rutted.

f) Where trails have been eroded by runoff flowing across the trail, construct a concrete or rock lined ford, or divert runoff along a table drain to a culvert or a stable ford.

g) Remove shrubs, bushes and saplings as required to maintain a minimum 1 m clearance on each side of trails. Plant species listed in the Threatened Species Protection Act, 1995, should

not be removed without a permit. Cut vegetation should not be left on the side of the trail but removed from the site, or stockpiled and burnt in a clear open area.

h) Cut up and remove any trees that have fallen across trails. Larger branches and stumps should not be left on the side of the trail but dragged into the bush on the side of the trail, or removed from the area. Small branches should be removed from the site, or stockpiled in a clear open area and burnt. Make sure that fallen trees and branches are cut back at least 2 m from the edge of the trail.

i) Ensure that gates on emergency vehicle access routes are intact and locked, and that locks on gates are working smoothly.

j) Replace any trail identification signs or markers that have been damaged or removed.

DORMANT ACCESS ROUTES

Dormant access routes should be inspected every two years to ensure they are not eroding. If major erosion has occurred it should be repaired and appropriate drainage provided to ensure further erosion does no occur.

DOCUMENTATION

Emergency vehicle access route inspections should be recorded on the following form, and passed on to the relevant agency for action:

EMERGENCY VEHICLE ACCESS ROUTE INSPECTION FORM

Date: **Trail name/number:**

Inspected by:

Reason for Inspection:

Pre-bushfire season check on:

Notification from: Received by: On:

Heavy rainfall on:

Wind storm on:

CHECKLIST

ITEM	CONDITION	GRID REFERENCE	RECOMMENDED ACTION	COMPLETED ON	BY (signed)
Trail surface	❑ Good ❑ Poor at				
Trail erosion	❑ Good ❑ Poor at				
Trail drainage	❑ Good ❑ Poor at				
Trees and branches across trail	❑ No ❑ Yes at				
Trail overgrown	❑ No ❑ Yes at				

Gates and locks: ❑ Good condition, or ❑ Repair required at:

MP 3 TRAIL CLOSURE AND REHABILITATION

Objective

To ensure that trails on the Meehan Range not required for fire management are closed in a way that minimises adverse impacts on the environment, but allows for their re-opening if required for fire control in the future.

Application

All trails on the Meehan Range that are not required for fire management, or use by landowners.

Guidelines

GENERAL PRINCIPLES

The main consideration is to stop water running down closed trails causing on-going soil erosion and sediment runoff.

Complete restoration should be done in accordance with works plans, provided that conditions are not so wet that works will be ineffective.

It must be borne in mind that closed trails may need to be re-opened temporarily to provide control lines for suppressing wildfires and prescribed burns. Revegetation of closed trails should therefore be limited to indigenous shrubs and grasses that provide stability, but can be easily removed if the trail is to be re-opened.

Revegetation of closed trails should include any associated disturbed areas such as cut and fill batters and borrow pits.

SURFACE AND DRAINAGE

a) Construct cross drains to avoid concentration of runoff and minimise erosion.

b) Cross drains should be constructed at 45 to 90 degrees to the trail with a cut that is about 0.3 m deep (measured from the upper side of the cut) and about 1 m wide, with a cross-fall of 1 % to 3 %. The spoil from the cut is to be placed on the down hill side of the cut to form a bank.

c) Cross drains should be placed at changes in slope and to take advantage of natural drainage points.

d) Spacing of cross drains is to be at least equal to the lower limits in Table 1 of MP 1 (Emergency Vehicle Access Route Construction).

e) Deep ruts and washouts (depth of 0.2 m or more) should be filled, closed over and drained.

f) Bridges and culverts should be removed, and the trail restored to a condition where surface water will not drain directly into the watercourse. Wherever possible watercourses should be able to flow along their original courses.

g) Material used for trail rehabilitation must be from areas free of weeds.

h) Material used for trail rehabilitation must be sourced from a confirmed *Phytophthora cinnamomi* free source.

REVEGETATION

a) Treat any weed growth along the side of the trail (consult with Council weed control officer).

b) Lightly rip any sections of the trail with a hard compacted surface.

c) Rake leaf litter from weed free bushland adjacent to the trail across the trail.

d) Cut brush from adjacent bushland and lay it across the trail to provide a suitable environment for seed germination. Wherever possible use material containing seed.

e) Inspect the trail 6 months and one year after closure and treat any weed growth.

f) Thereafter inspect the closed trail every 3 years, treat any weeds, and cut and poison any tree saplings that may have germinated on the trail.

SIGNAGE AND PREVENTION OF ACCESS

Erect signs at either end of closed trails and place suitable barriers (eg, large logs) at these points to prevent unauthorised use.

Sources

Asia Pacific Forestry Commission (1997) Code of Practice for Harvesting in Asia-Pacific, FAO, Bangkok.

Forestry Commission Tasmania (1993) *Forest Practices Code*. Forestry Commission Tasmania, Hobart.

Rudman T., Tucker D, and French D. (2004) *Tasmanian Washdown Guidelines for Weed and Disease Control*. Edition 1. Department of Primary Industries, Water and Environment, Hobart.

MP 4 CONSTRUCTION AND MAINTENANCE OF STORED WATER SUPPLIES

Objective

To construct and maintain stored water supplies so that they continue to provide a reliable water supply to refill fire tankers, and are accessible by fire tankers at all times.

Application

Water points on the Meehan Range constructed to provide a water supply for fire management operations (includes; dams, waterholes and pools in running streams).

Guidelines

LOCATION

a) As a general rule water points should be located along emergency vehicle access routes so that no point on the trail is more that 10 minutes drive for a heavy tanker from a water point.

b) Waterholes can be constructed on reasonably level areas on the sides of emergency vehicle access routes in clayey soils with good water retention properties. Sites that receive some runoff and/or seepage should be preferred.

c) Dams can be constructed close to trails in drainage depressions or class 4 Streams (Forest Practices Board, 2000). Note that a permit from DPIWE is required for any dams on a defined watercourse, and for dams with a capacity greater than 1 megalitre in other locations.

d) Pools can be constructed in creeks adjacent to bridges and fords. If the creek bed is on bedrock or rocky, the pool can be dug in the creek bed. For creek beds in gravels, sands, silts or clays an off stream storage should be constructed as shown in Figure 1.

CONSTRUCTION

a) Water points should have a minimal surface area to volume ratio. They can be more than 5 m deep and have near vertical walls - however, one side should be sloped at less than 10˚ to allow for people and animals to exit the WP should they fall in.

b) Water points should have a minimum reliable capacity of 30,000 litres.

c) "Off stream" water points should be constructed to the side of the stream channel and can be constructed efficiently with excavators. The storage hole should fill from the stream under high flow and when full, the over flow from the storage hole should run back into the water course. Disturbance of the stream channel should be minimised. Flood flows should follow the original watercourse, not flow through the water point.

d) Where a dam wall needs to be constructed the wall should be "keyed" at the base with clay material to provide an effective seal. The face of a dam wall should also be lined with clay to provide a seal.

e) Material dug out with excavators should be levelled off and contoured to leave a tidy and visually acceptable site.

f) Water points that are not beside roads require a vehicle access track suitable for heavy tankers. A fender log or bollard should be placed to prevent vehicles accidentally backing into the water point.

g) A level platform should be constructed on the edge of the water point to provide a stable platform to locate pumps.

h) There must be a heavy tanker turning area within 50 m of the water point. If there is no trail intersection within this distance, a cleared area will need to be provided on the side of the track.

IDENTIFICATION SIGNS

a) For consistency all water points the Meehan Range (excluding fire plugs) should be identified using the same system as Forestry Tasmania.

b) Metal "Duraposts" or equivalent should be used to mark all water points. These should be installed in a clearly visible location on the side of the road or trail next to the access to the WP.

c) Marker posts should be painted in blue powder coat, be 1350 mm long, and have a reflective red "W" at the top of the post.

d) Reflective red arrows should be placed on the post to indicate the direction to the water point.

e) Each marker post should show the water point number and characteristics code (Table 1) in red reflective lettering, for example - 10 H A 2 A

f) The product code for the Durapost marker in use is (W1350). The product is available from:
Durapost
PO Box 157
Exeter TAS 7275 Phone (03) 63963323

Table 1 - Water Point Characteristics

Characteristic	Description	Code
Access (note: access codes can be combined)	Helicopter	H
	Articulated bulk water carrier	A
	Heavy/Medium tanker (Classes 3 & 4)	M
	Light tanker (Class 5)	L
Volume	greater than 500,000 litres	1
	greater than 50,000 litres and less than 500,000	2
	less than 50,000 litres	3
Reliability	Permanent running water	A
	Retains water when the SDI exceeds 100	B
	Dries up when the SDI exceeds 100	C
	Not known	D

MAINTENANCE

Check all stored water supplies at the beginning of the bushfire season and:

- clean out waterholes whenever sedimentation has reduced their capacity by more than 30% of the original volume
- ensure that heavy fire tankers can reverse safely to within 4 m of the water point
- ensure that heavy fire tankers can turn at, or close to, each water point.

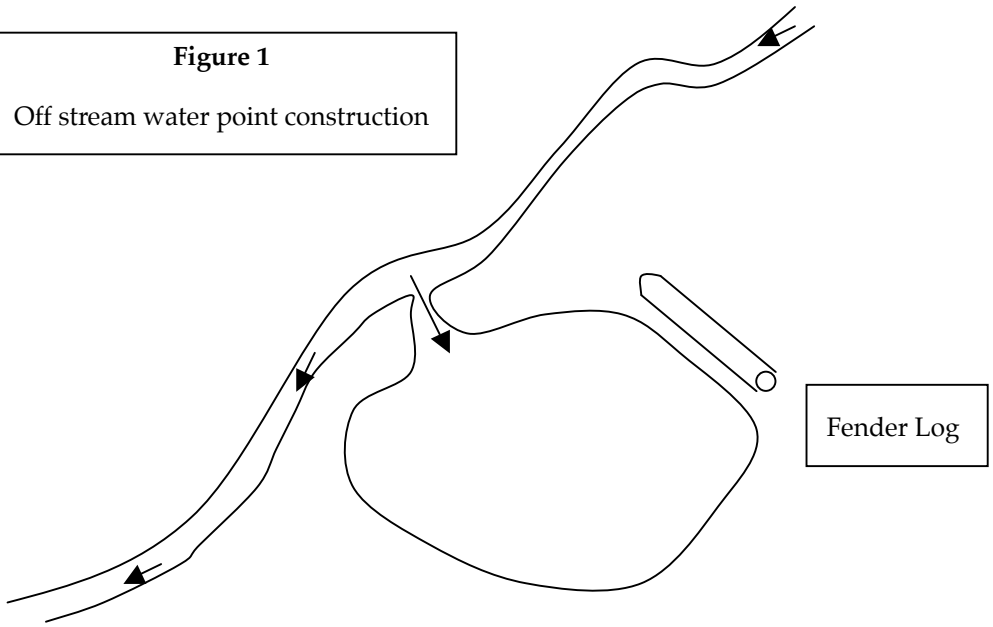
Sources

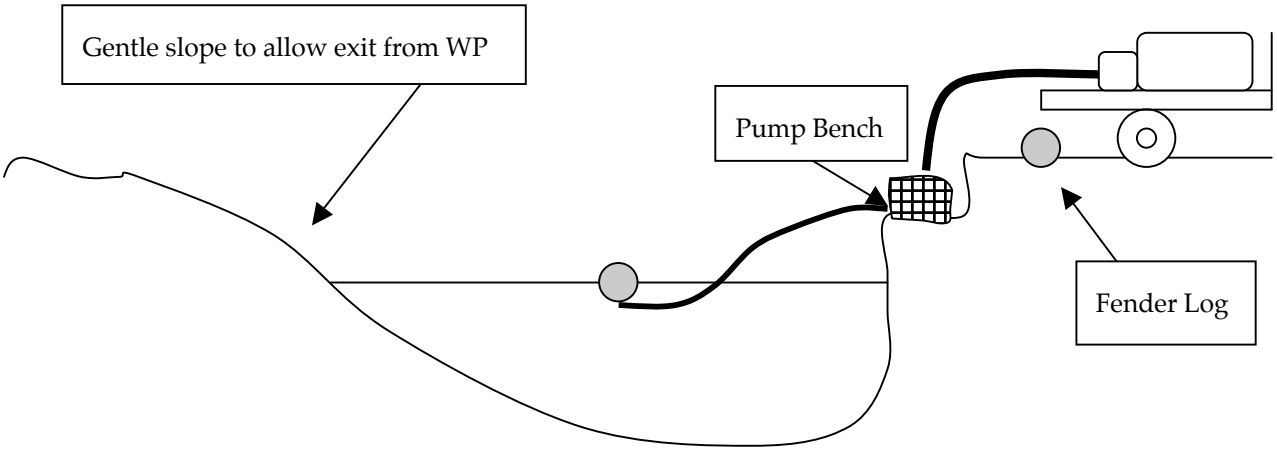
Tucker D. (2002). *Guidelines for the Construction of Water Points for Fire Fighting*. Forestry Tasmania, Hobart.

Forest Practices Board (2000) *Forest Practices Code.* Forest Practices Board, Hobart, Tasmania.

Figure 1

Off stream water point construction





MP 5 PRESCRIBED BURNING

Objective

To burn defined areas of bushland or grassland in a safe, controlled, manner in order to achieve a management objective or objectives.

Application

Burning of relatively small areas to which a specific fire regime has been applied using low-intensity ground ignition by crews on foot.

Preamble

The Australian Fire Authorities Council's course in prescribed burning has listed the four principles of prescribed burning as:

- "Planned fire must accord with approved management plans, or in their absence must protect and maintain the priority land use.
- Planned fire must only be undertaken after the preparation of written prescriptions.
- For ecological objectives, planned fire must promote the greatest possible diversity of habitats and representation of successional (seral) stages of vegetation.
- For protection objectives, planned fire must be demonstrably effective and not result in undesirable ecological effects".

General procedures for hazard reduction operations are set out in the Tasmania Fire Service's Standard Operating Procedure.

Guidelines

There will always be a risk that prescribed burns may escape the set control lines and damage adjoining bushland or property. The level of this risk can only be fully ascertained at the time of the burn. It is therefore imperative that no prescribed fires should be lit until the officer in charge of the burn is satisfied that the prevailing burning conditions, and available fire fighting resources, are such that the fire can be contained within the set boundaries, and will meet the prescribed outcomes for the burn.

PRESCRIBED OUTCOMES

Specific outcomes for each burn are detailed in Table 10 of the fire management strategy.

General outcomes for all burns:

- exclusion of fire from identified fire sensitive plant communities, habitats of fire sensitive threatened flora and fauna, and riparian plant communities
- minimum 10 m wide unburnt buffer along creeklines maintained

- no fire fighting foam used near water supply dams, or near known populations of threatened plants without prior consultation with the PWS Threatened Species Unit
- exclusion of fire from any fuel modified buffer zones that are close to dwellings and are being actively managed by other means
- retention of fallen logs, dead trees and stumps where possible
- burn coverage greater than 80%
- fine fuel loads reduced to less than 5 tonnes per hectare overall
- minimal smoke over nearby urban areas
- *Phytophthora cinnamomi* hygiene protocols complied with.

PERSONNEL

The person in charge of the crew conducting any burns prescribed in this fire management strategy must have completed training to Officer level in the Tasmania Fire Service (TFS) (or equivalent), and have currency in accredited courses/competencies for low intensity prescribed burning. If the burn is to be carried out near a public road, the person in charge must also have an accredited competency in managing smoke hazards over roads.

All crew members must have completed the TFS's Respond to Wildfire course (or equivalent). All personnel involved in the burn must be attired, and provided with personal protective equipment, as set out in the TFS Emergency Response Procedure. All personnel must comply with the relevant safety procedures in the TFS Standard Operating Procedures.

Crew Strength

Officer in charge plus 4 crew members for smaller burns; 6 crew members required if two tankers are used on larger burns. An additional 2 , suitably qualified, crew members may be required to control traffic if smoke is likely to blow across nearby roads, alternatively the police or local government will be required to assist with traffic control. Recommended minimum crew strengths in this MP can be varied at the discretion of the officer in charge of the burn.

MINIMUM RESOURCES

Light, medium or heavy tanker as appropriate. More than one tanker may be required for larger burns (decision to be made by the officer in charge prior to the burn)

- hydrant standpipe on each tanker
- 3 McLeod Tools
- axe and brush hook
- 3 drip torches + fuel
- 2 knapsack sprays (4 for units where there is limited vehicle access)

- chainsaw and fuel
- fire hoses sufficient to mop up for a distance of at least 200 m from the boundary of the burn
- instruments to measure wind speed, relative humidity and temperature
- drinking water and first aid kit
- warning signs, traffic control signs, and road barriers as required.

Recommended minimum equipment requirements in this MP can be varied at the discretion of the officer in charge of the burn.

Communications

- The crew conducting a burn must have the means to communicate with the Tasmania Fire Service (mobile phone, radio) at all times while the burn is under way in case back-up is required.
- Hand-held radios should be used if the area to be burnt is relatively large, and crew members will be out of sight of each other.

FUEL AND WEATHER CONDITIONS

The following fuel and weather conditions are considered to be optimal for safe, low intensity burning of dry forests and grassy woodlands:

- Fuel Moisture Content (FMC) of surface fine fuels 13% to 16%
- Soil Dryness Index (SDI) - 25 to 50
- Fire Danger Index (FDR) - Low
- Wind Speed - < 20 km per hour in the open
- Relative Humidity - 40% to 60%
- Temperature - < 20˚ C

Where it is necessary to ensure that a fire will go out overnight, ensure that the forecast overnight minimum temperature will be less that 10˚ C, and the forecast overnight wind speed less than 5 km/h.

All non-target, wet type plant communities (riparian vegetation, wet forest, mixed forest) within, or adjacent to, the area being burnt should be too wet to burn.

Burns should only be undertaken when forecast winds will not carry smoke towards nearby urban areas. On calm days burns should be timed so that they burn out before inversions form in the evening. Burns on the Meehan Range need to be coordinated with other planned burns in the area to avoid excessive levels of smoke in the Derwent Valley.

Burning can be undertaken when weather conditions are outside these prescriptions if the officer in charge is confident (based on past experience) that the desired outcomes can be safely achieved.

PREPARATION

3 Months Prior to the Burn:

- Carry out weed treatment as required (refer to MP 6 for weed control methods).
- If there are threatened species in the unit to be burnt consult with the DPIWE Threatened Species Unit.

Week Prior to the Burn:

- Check long-range weather forecast to confirm if conditions are likely to be suitable for the burn. Postpone the burn if conditions are likely to be unsuitable.
- Officer in charge to inspect the area to be burnt and assess fine fuel loads, effectiveness of weed treatment, and the resources required for the burn (size and number of tankers, equipment, crew strength, hoses, communications etc.).
- Complete appropriate sections of the Parks and Wildlife Service's Fuel Reduction and Ecological Planned Burning Form.
- Clear vegetation and leaf litter off tracks to be used as fire control lines, or clear new control lines along the boundary of the burn where there are no existing control lines. Ensure that there is a mineral earth barrier sufficient to stop fire burning across the control line. In grassed areas a wet line laid immediately before ignition may provide an adequate control line.
- Ensure that trails required for vehicle access to the area to be burnt are trafficable.
- Ensure there is access to a nearby water supply for refilling tankers if required.
- Obtain a burning permit, if required.
- Place signs on any public foot tracks or roads leading to the area to be burnt informing the public of the date of the burn.
- Inform adjoining landowners/residents of the proposed date of the burn, the reason for the burn, and public safety precautions that will be taken. Also inform residents that the burn may be postponed if weather conditions are unsuitable. Include a contact number that residents can contact for further information.
- If the area to be burnt will include an electricity transmission line easement contact the appropriate authority (Transend or Aurora Energy).

Day before the Burn

- Check weather forecast to confirm that conditions will be suitable.

On the Day of the Burn:

- Re-check weather forecast (particularly wind speed and direction) before deciding to proceed.
- Physically examine surface fuels to check that they are not too wet or too dry.

- Check that any non-target wet type vegetation within and adjoining the area being burnt is too wet to burn.
- Take weather measurements in the field (temperature, relative humidity and wind speed) and calculate a Forest Fire Danger Rating. Check that the weather parameters are within the prescriptions. If not, consider cancelling the burn.
- If conditions are suitable for the burn, notify Tasmania Fire Service FireCom and, where possible, contact neighbouring landowners/residents to confirm that the burn will proceed.

Immediately Prior to Burning:

Step 1 - station a tanker at a point where hoses can reach an area suitable for a test burn; start the pump and run out a hose.

Step 2 - light a test burn in an area of typical vegetation and allow it to burn long enough to assess wind direction and likely flame height. Extinguish the test burn.

Step 3 - assess the overall conditions for the burn including; the results of the test burn, existing and predicted weather conditions, and resources available. Determine if the burn can be carried out safely and according to the prescription. Postpone the burn to later in the day, or re-schedule it if conditions are unsafe and prescribed outcomes cannot be met; otherwise proceed to Step 4.

Step 4 - check perimeter control lines and touch up as required to ensure there is a mineral earth barrier sufficient to stop fire crossing the control line. In grassed areas a wet line laid immediately before ignition may provide an adequate control line. Clear fuel away from the base of any dead standing trees close to the edge of the burn.

Step 5 - put out warning signs and set up traffic controls if required (this will need to be done by Council or the police if the TFS is carrying out the burn).

IGNITION TECHNIQUES

There are two main techniques for low intensity ground ignition by crews on foot; line ignition and spot ignition.

With spot ignition approximately 2/3 for the area being burnt will be burnt by relatively low intensity back and flank fires, rather than the higher intensity head fire. While this makes it easier to ensure a low fire intensity, it is also more likely that patches may remain unburnt. Depending on the spacing of the spot ignitions, this method will take longer to burn a given area than line ignition.

In line ignition approximately 5/6 of the area will be burnt by the relatively high intensity head fire, and it may be difficult to control fire intensity if fuel loads are high. However, this method is much quicker than spot ignition, and it is easier to ensure that the whole of the target area is burnt.

The spot burning technique is illustrated in Figure 1. For line ignition the lighting crew would ignite staggered lines of fire as they move through the bush, rather than regularly spaced spot fires.

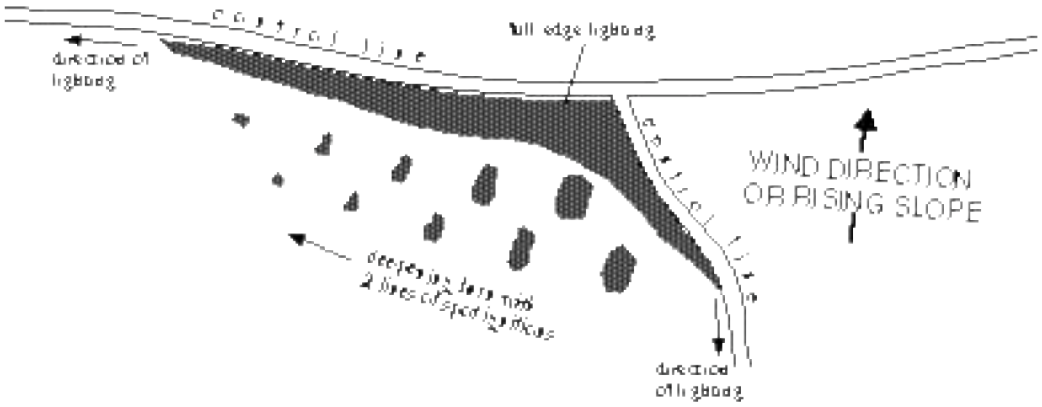


Figure 1: Spot ignition technique for low intensity ground ignition by foot
Adapted from AFAC (1996)

Within each ignition technique fire intensity and flame height can be controlled by the spacing of the ignition points or lines. For spot ignition the greater the spacing of the spots the lower the overall intensity. This is because with fewer ignition points a greater proportion of the area will be burnt by back and flank fires, and the number of junction zones will be reduced. For line ignition the closer the spacing of the lines the lower the intensity. This is because when lines are close together (2 to 3 metres) the head fire from each line of ignition will run into the back fire from the previous line of ignition before it has had time to build up momentum and intensity.

The most appropriate ignition technique should be decided by the officer in charge at the time of the burn in order to ensure it is conducted safely. An experienced crew should be able to use a combination of both techniques to achieve the objectives of the burn. For example, in the middle of the day when fuel moisture content is relatively low, spot ignition may be required to control fire intensity, however as fuel moisture content increases in the late afternoon a switch to line ignition may be required to maintain the fire.

The general procedure to be followed during the burn is:

- position a tanker on each flank of the area to be burnt
- have at least one member of the crew watching for, and equipped to extinguish, any spot fires outside the control lines
- commence the burn at the uphill, downwind corner of the area to be burnt. Ensure that this corner is blacked out for a distance of approximately 10 m in from the apex before continuing the burn
- extend the burn along each flank in sections approximately 5 m to 10 m long while simultaneously burning the interior of the area in strips, or by a line of spot ignitions. The

lighters should move in a slanted formation through the area, with the lighter on the downwind or upslope line leading the staggered crew. This ensures that none of the lighters will be threatened by fire downslope or upwind. Ensure that the burning along the perimeter is always further advanced than the interior burn. Allow each pass of the lighting crew (1 to 3 runs) to burn down before starting the next pass

- immediately after the fire has passed wet down any wooden fence posts, large logs, and trees with burnt cavities along the perimeter of the burn to insure they are not ignited
- control the intensity of the burn, and therefore the scorch height, by varying the width of the strips burnt, or the spacing of spot fires. The wider the strip or the closer the spots, the higher the intensity of the burn. If strip or spot burning is producing a fire of too high an intensity, allow the fire to burn downslope or downwind unaided. If fire intensity is still too high, extinguish the fire
- ensure that the fire is stopped before it reaches any vegetation specifically excluded from burning
- blackout the burnt area immediately after completion of the burn, taking particular care to extinguish burning logs and hollow trees
- Take regular weather readings and assessment of fire intensity
- Complete the Wellington Park Burn Day Report.

AFTER THE BURN

- Check the burnt area on the day following the burn and extinguish any smouldering logs, stumps, hollow trees or underground roots.
- If the burn was carried out in spring, continue periodic checks of the site for flare-ups until the next significant rain.
- Record details of the burn using the procedure in MP 9.
- Check for weed growth and carry out follow-up weed treatment if required (refer to MP 6 for weed treatment methods).

Sources

AFAC (1996) *Prescribed Burning 1.* Australian Fire Authorities Council and Longman, Melbourne.

Forestry Tasmania (1996) *Fuel Reduction Burning; Course Notes*. Forestry Tasmania, Hobart.

NSW Rural Fire Service (1997) *Prescribed Burning Course Manual.* NSW Rural Fire Service, Sydney.

Parks and Wildlife Service (1994) *Phytophthora cinnamomi* Hygiene Manual. Edition 2. Parks and Wildlife Service, Hobart.

Rudman T., Tucker D, and French D. (2004) *Tasmanian Washdown Guidelines for Weed and Disease Control*. Edition 1. Department of Primary Industries, Water and Environment, Hobart.

Tasmania Fire Service (1998) *Emergency Response Procedure*. Tasmania Fire Service, Hobart.

Tasmania Fire Service (1998) *Standard Operating Procedure*. Tasmania Fire Service, Hobart.

Tasmania Fire Service (1984) *Guidelines for Fuel Reduction Burning Under Dry Forests.* Tasmania Fire Service, Hobart.

MP 6 WEED CONTROL BEFORE AND AFTER BURNING

Objective

To use fire to assist in controlling the spread of woody and herbaceous weeds on the Meehan Range through:

- removing weed biomass, and reducing the amount of regrowth by destroying seed in the litter and on the soil surface; and
- removing weed debris created through bush regeneration, or other weed control activities.

Application

a) Areas where periodic prescribed burning is used to reduce fire hazard.

b) Areas where prescribed burning is recommended in a fire management strategy as a tool to control existing weed populations.

Guidelines

a) Known responses to fire of introduced plants on the Meehan Range is detailed in Table 9 of the main report.

b) Prior to prescribed burning any mature woody weeds in the areas to be burnt should be treated to ensure infestations are root dead at the time of burning. Chemical treatment of woody weeds may involve cutting and poisoning the stump (cut-stump), tree injection, or spraying with an appropriate herbicide. Herbaceous weeds should be treated using a foliar spray. Treatment of target weeds in the region both pre- and post-fire has been detailed in Table 1. Where herbicide treatment of weeds is required, contact the Council weed control officer.

c) Herbicide treatment should be carried out at least 3 months prior to the burn to ensure that the chemical has penetrated into the root system, achieved a total kill of all tissue, and the plant has had time to desiccate prior to burning. This will maximise removal of weed biomass during the burn. Disturbance of the treated weedy sites (by mechanical means, slashing or burning) within this period may reduce the chemical's effectiveness, and regeneration from rootstock is likely to occur.

MP 6 Table 1

d) Following a prescribed burn in weed infested areas, a flush of weed seedlings can be expected. It is essential to treat weed seedlings (either manually or using a foliar spray) before indigenous plant seeds germinate. As a rule of thumb, herbaceous (and some woody) weeds germinate rapidly in high light situations, so that it may be possible to treat the flush of weeds before any native seeds germinate. However, once native seeds have germinated, control options are reduced to careful spot-spraying (using a protective cone nozzle sprayer) or hand weeding.

e) Woody weeds regenerating from rootstock must also be treated promptly. Re-cutting the stump and poisoning, drilling into the bole (junction of stem and root), or spraying new shoots when they reach approximately 0.5 m in height, is recommended.

f) Burning weed debris in situ is an economical way of disposing of large amounts of material, and may stimulate germination of indigenous plant seeds if present in the soil. Note that burning will also stimulate weed seeds to germinate and follow-up treatment will be required.

Sources

Buchanan R. A. (1986) *Bush Regeneration – Recovering Australian Landscapes*. Inkata Press, Melbourne.

Chladil M. (1991) Fire management for nature conservation. In Kirkpatrick J. B. (Ed) *Tasmanian Native Bush: A Management Handbook*. Tasmanian Environment Centre, Hobart.

Parsons J. M. (1995) *Australian Weed Control Handbook*. Inkata Press, Melbourne.

Robin J. (1991) Control of environmental weeds. In Kirkpatrick J. B. (Ed) *Tasmanian Native Bush: A Management Handbook*. Tasmanian Environment Centre, Hobart.

MP 7 COORDINATING FIRE MANAGEMENT ACTIVITIES

Objective

To assist Clarence City Council, the Tasmania Fire Service, and landowners on the Meehan Range to achieve the objectives of the Fire Management Strategy by coordinating all fire management related activities so that their effectiveness is enhanced.

Application

All State government, local government, non-government bodies and private landowners involved in planning, controlling and executing fire management activities on the Meehan Range.

Guidelines

GENERAL

a) Ensure coordination of management activities through setting up a committee of major stakeholders to oversee the implementation of the Fire Management Strategy.

b) Ensure availability of up-to-date information to all stakeholders, including up-to-date mapping information (eg. vegetation types, fire history, location of rare/threatened species and exclusion zones, location of weeding and/or planting sites).

c) Coordinate site selection and timing of all proposed fire management and weed control activities.

SPECIFIC

a) When selecting sites for prescribed burning, ensure protection/exclusion of all fire sensitive plant communities and species.

b) In areas scheduled to be burnt within the next twelve (12) month period, ensure that appropriate weed control measures are carried out at least 3 months prior to burning (see MP 6 for weed control measures before and after fire).

c) To use fire as an inexpensive means of removing weed debris and/or reducing soil nutrients, instruct weed control crews to stockpile debris and flammable rubbish in areas accessible to fire brigade crews, and away from natural or cultural assets.

d) Ensure that identified plant communities, and rare and threatened species, are managed strictly in accordance with the fire regime specified in the fire management strategy (excepting unavoidable incidents of wildfire or arson).

e) Ensure that suitably qualified agencies or contractors are used for fire management activities on the Meehan Range.

COORDINATING MANAGEMENT ACTIVITIES

A meeting of the principle management agencies, and other relevant stakeholders, should be held each autumn at the commencement of the burning season in order to coordinate and integrate the various on-ground fire management activities to be undertaken over winter.

A meeting should also be held in spring at the beginning of the bushfire danger period to review works undertaken during autumn and winter, and coordinate activities during the fire season.

The meeting should include representatives of the Parks and Wildlife Service, Tasmania Fire Service brigades who cover the area, and representatives of any groups who will be carrying out fire management, weed control or bush regeneration activities on the Meehan Range. Telstra, Transend Networks and Aurora Energy should also be included if issues affecting their infrastructure will be discussed.

The meetings should be minuted, and an edited version of the minutes prepared that summarises management actions completed since the previous meeting, and future management actions agreed to at the meeting. The edited minutes should be circulated to all interested stakeholders.

Autumn Meeting

The autumn meeting should at least consider and resolve the following issues:

- what is the best time to carry out scheduled prescribed burns so that they cause the least disruption to other management activities (weeding, planting, general maintenance)?
- to what extent is pre- and post-fire weeding required, who will carry it out, and when?
- potential for coordination of clearing for fire hazard reduction with larger weed control programs
- what other preparation work needs to be carried out, who will do it, and when?
- are there any areas within, or adjacent to, areas to be burnt (such as new plantings) that require special protection, and what protection measures will be taken?
- is everyone aware of the identified fire exclusion zones (eg. fire sensitive plant communities or habitats)?

- have any threatened species been recently identified in the area? Are they likely to be affected by the burns proposed for the year? If so, what needs to be protected from fire (nest sites, food sources etc)? If individuals of threatened species are likely to be killed in the burns, check if a licence from the Parks and Wildlife Service is required?
- which emergency vehicle access routes require maintenance, who will carry it out and when?

Spring Meeting

The spring meeting should at least consider and resolve the following issues:

- what are the predictions for the coming fire season?
- if a severe fire season is predicted can any precautions be taken to minimise the fire risk?
- have all the prescribed burns and other fire management activities for the previous winter been achieved, if not, can they still be achieved?
- has maintenance of all defendable spaces around public assets on the Meehan Range been carried out?

Sources

Buchanan R. A. (1989) *Bush Regeneration - Recovering Australian Landscapes*. TAFE Learning Publications and Inkata Press, Sydney.

Conroy B. (1988) Bushfire management planning in natural areas. In proceedings of the conference - *Caring for Warringah's Bushland*. Warringah Council, Dee Why, NSW.

Fensham R. J. (1991) *Fire Management in Hobart's Bushland*s. Unpublished report for Hobart City Council, Hobart.

Ku-ring-gai Municipal Council (1991) *Fire Management Policy.* Ku-ring-gai Council, Gordon, NSW.

MP 8 RECORDING WILDFIRES

Objective

To provide a record of wildfires on the Meehan Range, and their effects, that can be used to revise the Fire Management Strategy.

Application

Any wildfires on the Meehan Range.

Guidelines

For compatibility any wildfires within the area covered by the Fire Management Strategy should be recorded using the Parks and Wildlife Service and Forestry Tasmania fire reporting system 'FIRES' (Fire Incident Reporting and Evaluation System).

In addition, for management purposes the following details should be recorded:

- location of any bulldozed fire control lines
- any assets lost on the Meehan Range
- any problems encountered during fire fighting operations, such as poor condition of access, inadequate water supply
- dates and extent of any post-fire weed control
- date of completion of post fire recovery (MP 11) and details of specific works carried out.

MP 9 RECORDING FIRE MANAGEMENT ACTIVITIES

Objective

To provide a record of prescribed burning and other fire management activities, that can be used to evaluate and revise the fire management strategy.

Application

- Any prescribed burns on the Meehan Range.
- Construction and maintenance of fire management assets on the Meehan Range.

Guidelines

In general, information on fire management activities will be recorded by whoever carried out the work.

PRESCRIBED BURNS

The Parks and Wildlife Service and Forestry Tasmania are currently developing a prescribed burning module to add to their fire reporting system 'FIRES'. When this becomes available it should be used for recording fires within the area covered by the fire management strategy. In the interim, the Parks and Wildlife Service's 'Fuel Reduction and Ecological Planned Burning Form' should be used for recording any prescribed burns lit as part of this fire management strategy. In addition to the these records, the following details should be recorded in the attached record sheet for management purposes:

- who carried out the burn
- crew strength
- percent of canopy scorch (survey one to two weeks after the fire)
- any variations to the burning prescription in the fire management strategy
- dates and extent of any pre- and post-burn weed control
- weed species and general density of weeds in the area burnt at the time of pre-burn weed control (Council weed control officer to assist if required)
- cost of the burn including weed control.

CONSTRUCTION AND MAINTENANCE OF FIRE MANAGEMENT ASSETS

This includes construction and maintenance of emergency vehicle access routes, fire breaks, and water points.

Information recorded should include:

- location
- the nature of the work carried out
- date
- who carried out the work
- cost
- any difficulties encountered in carrying out the work.

Meehan Range: Supplementary details of prescribed burns (page 1)	**Fire management unit number:**	**Season:**
Area burnt (ha):	**Location:**	**Grid reference:** easting: northing:
date/time started:	date/time all activities ceased:	
Who carried out the burn: **Crew strength:**		
Variations to the burning prescription in the fire management strategy:		
Fire effects: scorch height .....(metres) **Others:**		
Values protected (property, human lives, rare or vulnerable wildlife etc):		
Pre-burn weed control carried out on: **By:**		
Weed species and general density of weeds at the time of pre-burn weed control:		
Post-burn weed control carried out on: **By:** **Other post-burn recovery activities:**		
Costs: pre-fire weed treatment: prescribed burn: post-fire weed control: other costs (specify):		
Remarks (including problems encountered and recommendations, and whether objectives of the burn were met, and whether prescriptions were adhered to): (continue overleaf if necessary)		
Reported to TFS .....……..(date) by	**Entered in GIS** ...…….....(date) by	

Meehan Range: Supplementary details of prescribed burns (page 2)	**Fire management unit number:**	Season:

Map of fire (show area burnt, vegetation types, location, assets protected, control lines, grid references, north point, scale, date, approximate positions of fire boundaries at various times, relative intensities of fire (crown fires, spotting, etc) crown scorch, defoliation, etc

Report compiled by:

.....(signature) .....(date)

MP 10 PLANNING GUIDELINES FOR DEVELOPMENTS

Objective

To ensure that developments on the Meehan Range incorporate appropriate protection from wildfires.

Application

Any developments on the Meehan Range.

Guidelines

PLANNING SCHEME

a) Clarence City Council should initiate amendments under the Land Use Planning and Approvals Act, 1993 to implement appropriate development controls in bushfire prone areas on the Meehan Range.

b) The Tasmania Fire Service document *Guidelines for Development in Bushfire Prone Areas for Tasmania* should be used as the basis for defining bushfire prone areas and implementing planning controls to reduce bushfire risk.

c) All development proposals on the Meehan Range should require a planning permit, and applications should include proposed fire risk management measures.

d) Proposed fire risk management measures should meet current Tasmania Fire Service standards.

e) All development proposals in bushfire prone areas on the Meehan Range should be referred to the Tasmania Fire Service for comment.

MAPPING BUSHFIRE PRONE AREAS

The Tasmania Fire Service *Guidelines for Development in Bushfire Prone Areas of Tasmania* define "bushfire prone area" as:

> "Land with standing vegetation one hectare or larger in extent, or land within 100 metres of an area of standing vegetation one hectare or larger."

"Standing vegetation" is defined as:

> "All forms of vegetation as well as regrowth after clearing, as well as all plantations and any other continuous vegetation in the form of trees and scrub that grows to a height of 2 metres or greater."

Mapping bushfire prone areas is a 3 step process. Step 1 is to broadly map all areas of standing vegetation one hectare or more in extent. Step 2 is to fine tune the mapping by removing areas

where the vegetation is already managed to minimise the bushfire risk, or where the risk is naturally low. Step 3 is to refine the bushfire prone area map by including small areas that have been mapped as not bushfire prone in Step 1 as bushfire prone if they are surrounded by bushfire prone land.

STEP 1 – This step produces an initial rough assessment to which a 100 m buffer can be added and then refined in Steps 2 and 3. There are 2 methods which can be used in this step:

1. Use recent and good quality aerial photography to map all areas of standing vegetation greater than one hectare. This should include the following structural forms from the Atlas of Australian Resources – Vegetation (AUSLIG, 1990): T2, T3, M1, M2, M3, M4, L2, L2, L3, L4, S1, S2, S3, S4, Z1, Z2, Z3, Z4, H2, G3, G4, F3, F4 (see figure attached to this MP).
2. Alternatively, use TasVeg maps and exclude the following vegetation types (all others should be considered bushfire prone):

VEGETATION GROUP	VEGCODES
Agricultural, urban and exotic vegetation	FUM, FUR, FAG (orchards & vineyards only)
Highland treeless vegetation	HCM, HSE, HSW
Native grassland	GRP
Other natural environments	ORO, OSM, OAQ
Rainforest and related scrub	RKS, RFE, RSH, RFS, RMS, RHP, RKF, RKP, RPP, RPF
Scrub, heathland and coastal complexes	SBR, SQR
Moorland, sedgeland, rushland and peatland	MDS, MAP, MBR, MSP, MRR
Saltmarsh and wetland	AHF, AHS, AHL, ASS

When in doubt about an area of vegetation take a conservative approach and include it for more detailed assessment.

STEP 2 – This step refines the rough map produced in Step 1 by removing areas that may meet the mapping criteria in Step 1 but can be excluded as they have a low fire hazard. This includes:

- Areas where the fuel load in the understorey is actively managed to maintain it at less than 5 tonnes per hectare, for example Council Parks and private property where the understorey has been removed and the ground cover is regularly mown, and some types of agricultural land (such as vineyards and orchards) which are regularly watered and mown. Other agricultural land that may at some time during the farming cycle grow pasture should be considered bushfire prone land. Ground thruthing will be required to locate all these areas as it will not be possible to identify them all from aerial photos.

- Narrow strips of vegetation less than 20 m in width, such as along drainage lines through urban areas, and in road reserves.

Following Step 2 apply a 100 m buffer to all the vegetation mapped as bushfire prone, except for vegetation where the dominant fuel is grass. This includes the following TasVeg codes: GCL, GHC, GPH, GPL, GRP, GSL, GTL

Grass fuels do not generate burning embers to the same extent as heathland, shrubland and forest fuels. However, grassfires still result in major loss of life and property. The way that grassfires attack buildings is under investigation by the CSIRO. Once the results are published a buffer may have to be applied to grassland areas to define the bushfire prone area.

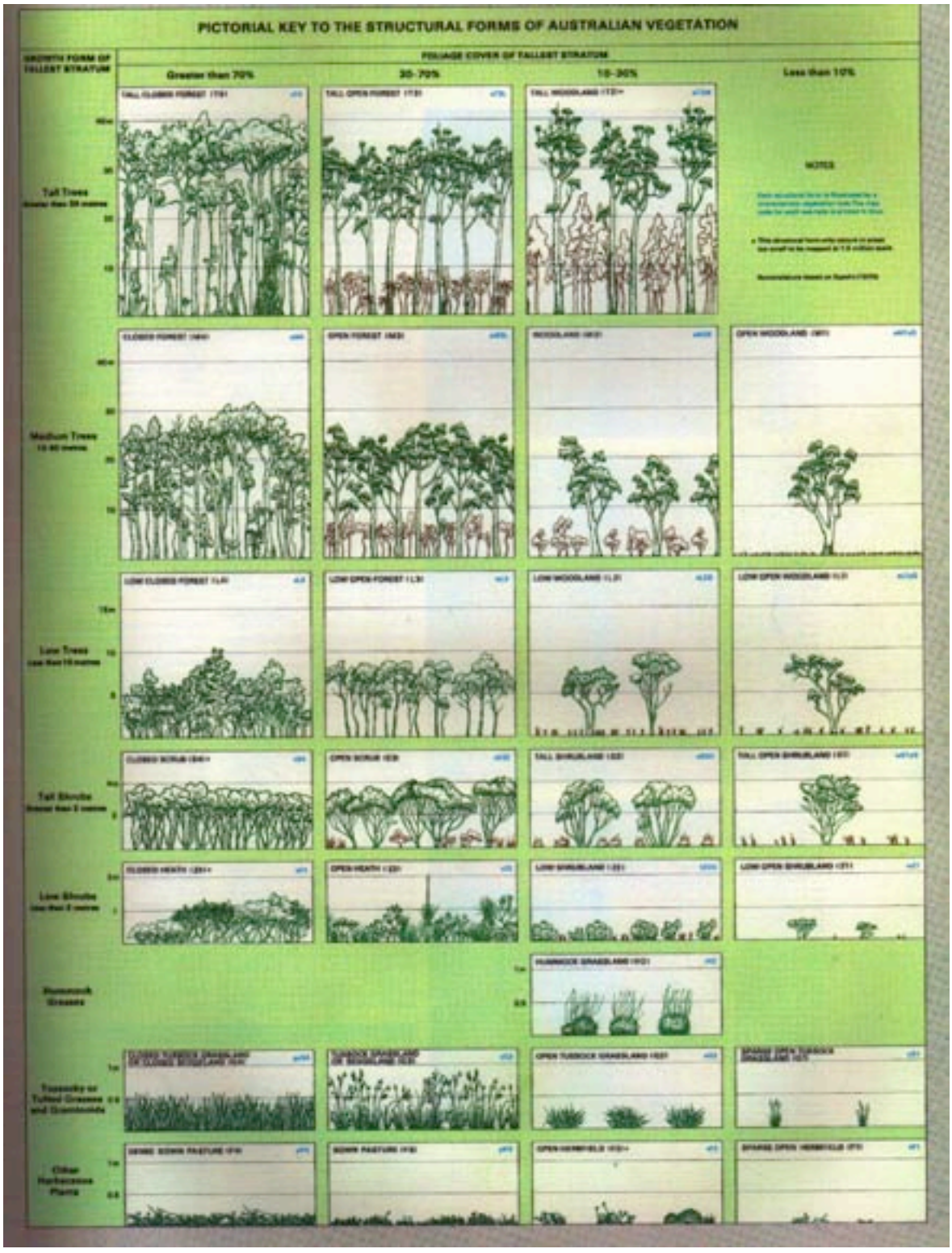
STEP 3 – This step further refines the map produced in Step 2 by including as bushfire prone land small areas outside the 100 m buffer which are surrounded by bushfire prone land. This includes:

- Discrete areas less than 1 hectare in area surrounded by bushfire prone land.
- Strips of land less than 50 m wide with extensive bushfire prone land on each side.

Sources

AUSLIG (1990) *Atlas of Australian Resources. Volume 6 Vegetation*, AUSMAP, Department of Administrative Services, Canberra.

Tasmania Fire Service (2005) *Guidelines for Development in Bushfire Prone Areas of Tasmania*. Tasmania Fire Service, Hobart.



From AUSLIG (1990) *Atlas of Australian Resources. Volume 6 Vegetation,* AUSMAP, Department of Administrative Services, Canberra.

MP 11 POST-FIRE SAFETY AND REHABILITATION

Objectives

- To ensure public safety in areas affected by wildfire.
- To minimise the risk of damage to assets on the Meehan Range following wildfires.
- To ensure areas affected by wildfire recover as quickly as possible.

Application

Any parts of the Meehan Range affected by a wildfire, or by actions taken to control and suppress wildfires, such as clearing of fire control lines.

Guidelines

a) Immediately following a wildfire on the Meehan Range, all trails through the burnt area should be closed to the public until they are inspected and declared safe.

b) Inspect all trails through the burnt area for damaged trees or branches and remove any that may fall on the trail.

c) Rehabilitate any control lines constructed to control the fire using the techniques in MP 3.

d) Approximately two months after the fire, inspect the burnt area and any rehabilitated control lines for weeds. The inspection should be carried out by the Council weed control officer. If noxious or environmental weeds are regenerating or invading, commence weed control using the procedure in MP 6.

e) Inspect all infrastructure and facilities and repair as required.

MP 12 PRIVATE PROPERTY ACCESS PROTOCOL

Objectives

- To maintain good relations with landowners
- To minimise damage to emergency vehicle access routes.
- To minimise the risk of introduction of plant diseases.
- To ensure that Tasmania Fire Service personnel likely to have to respond to wildfires on the Meehan Range are familiar with conditions in the area.

Application

Access to emergency vehicle access routes on private property on the Meehan Range by the Tasmania Fire Service and other agencies engaged in implementing this fire management strategy.

It should be noted that the TFS may enter private property without prior permission of the landowner when responding to a wildfire, or engaged in controlling a wildfire.

Preamble

Tasmania Fire Service brigades that may be called upon to respond to fires on the Meehan Range need to be familiar with conditions in the area in order to be able to plan control strategies and operate safely. These brigades may also be requested to carry out prescribed burning, and other fire management activities within the region. Other agencies (Council, PWS etc.) may also need access to emergency vehicle access routes on private property to carry out management activities recommended in this strategy.

Protocol

a) The Tasmania Fire Service headquarters and the following Tasmania Fire Service Brigades will be provided with security keys to all the gates controlling access to the emergency vehicle access routes on the Meehan Range:
   - Richmond
   - Risdon Vale
   - Cambridge
   - Clarence
   - Rokeby
   - Lauderdale

b) Each of these brigades will be provided with one key per vehicle likely to be used to respond to fires on the Meehan Range. Keys must be kept in the fire service vehicle at all times. Other

agencies will be provided with keys to those emergency vehicle access routes that provide access to their assets.

Keys must not be used to access emergency vehicle access routes on private property on the Meehan Range without the prior permission of the landowner/occupier, or an agreed MOU between the TFS and the landowner. A sample Memorandum of Understanding for emergency vehicle access route access and maintenance, prepared by Andrew Smeal of the Molesworth Fire Brigade is attached to this MP.

c) Tasmania Fire Service and other agency vehicles may only access trails not designated as 'emergency vehicle access routes' in the Meehan Range Fire Management Strategy with the specific permission of the landowner.

d) Landowners on the Meehan Range will not unreasonably refuse permission for Tasmania Fire Service vehicles and other agency vehicles and personnel to enter their property for legitimate fire management purposes where there is a prior general agreement. Legitimate purposes include:
   - prescribed burning
   - trail maintenance
   - familiarisation
   - training exercises

e) The Tasmania Fire Service and other agencies will advise the landowner of any minor trail maintenance (clearing drains, removing fallen tree etc.) carried out on their property. No major works will be carried out without the permission of the landowner.

f) Tasmania Fire Service and other agency personnel will abide by any conditions of entry that may be imposed by the landowner. These will be conveyed to crews at a briefing prior to entering the property.

g) Emergency vehicle access routes will only be used during dry periods to reduce the risk of damage to the trails.

h) Special care will be taken by Tasmania Fire Service and other agency personnel when using emergency vehicle access routes within catchments that provide water for domestic water supplies.

WILDFIRE SUPPRESSION

If any assets (gates, fences, pumps etc.) are damaged by wildfire, or in the course of wildfire suppression operations, the TFS will inform the landowner as soon as possible.

DRAFT

MEMORANDUM OF UNDERSTANDING

Between the

Tasmania Fire Service

And

(Landowner's Name & Address)

Access to and Maintenance of Emergency Vehicle Access Routes within the Meehan Range Fire Management Strategy

THE PARTIES AGREE:

Emergency Vehicle Access Route Access

1. Both parties agree to the description, the location, use and access of trails by the T asmania Fire Service (TFS) for maintenance, training and response to wildfire.

Risk Management

2. The TFS is committed to the occupational health and safety of TFS staf f. It has undertaken a thorough risk assessment for this management project and will implement control measures to minimise the risk to personnel, property and environment.

3. The TFS acknowledges that a residual risk will exist and agrees that it will be responsible for any damages that may arise from TFS operations.

Responsibilities of the TFS

The TFS agrees to:

4. Provide plans of the proposed emergency vehicle access route and associated works, and to consult with the landowner before commencement of works and before any changes are implemented.

5. Use an agreed access protocol to inform Landowner(s) of intended operations other than emergency response to bushfires etc.

6. Be responsible for the safe condition of the emergency vehicle access route.

Responsibilities of the Landowner

The landowner agrees to:

7. Inform the TFS of any possible hazards or problems with the emergency vehicle access route and/or gate(s) as soon as possible, including vandalism.

8. Allow authorised TFS access to the emergency vehicle access route at mutually agreeable times for maintenance checks.

9. Acknowledge that TFS staf f may access the emergency vehicle access route without notice if there is a fire report from the area.

10. Restrict unsupervised access to the emergency vehicle access route by locking gates if present.

Commencement and Termination

11. The arrangement shall formally commence upon signing of this Memorandum of Understanding.

12. The arrangement will continue until (insert date) with the possibility of extension, subject to agreement from both parties.

13. The arrangement may be terminated if a dispute between the two parties cannot be resolved.

AGREEMENT PAGE

This Memorandum of Understanding commences on:

This …….. day of …….. 2005.

Signed for and on behalf of the:

Tasmania Fire Service

Signature: ……

Name: ……

Position: ……

Witness:

Signature: ……

Name: ……

Signed for and on behalf of the:

Owner of (insert property identifier)

Signature: ……

Name: ……

Company: ……

Witness:

Signature: ……

Name: ……

Appendix B

Strategy Preparation Methodology

Methodology

Hazard Assessment and Management

Fire History

Information on the fire history in the Meehan Range (wildfires and prescribed burning) was gathered from records kept by the Tasmania Fire Service (TFS), and discussions with Tasmania Fire Service personnel and local residents. This research was generally limited to the last 25 years. This data allowed the recent fire regime on the Meehan Range to be estimated. TFS records and other available information on the causes of past fires was collated and summarised in the strategy.

Fire Threat Assessment

The potential fire threat to the various public infrastructure assets on the Meehan Range was assessed by taking into account surrounding fire hazard, its location in relation to potential ignition sources, likely fire approach (uphill or downhill), vulnerability, impact of likely fire damage, and any fire protection measures currently in place. Based on the threat assessment a fire protection strategy was determined for individual assets, or groups of assets. A bushfire risk assessment procedure was developed to allow individual landowners to assess and reduce the bushfire risk to their homes.

Fire Hazard Management

A program for strategic fuel management on the Meehan Range was developed, based on:

- fire threat assessments for individual assets
- fire behaviour predictions
- consideration of regional and local conditions.

To implement the fuel management program, bushland on the Meehan Range, which was identified as requiring fuel management, was divided into fire management units. Areas that are regularly grazed or used for other agricultural purposes have generally not been included in fire management units. The following criteria were used to determine the most appropriate boundaries for each fire management unit:

- wherever possible units are bounded by roads, emergency vehicle access routes, walking tracks or natural features that can be used as fire control lines
- unit boundaries correspond with existing property boundaries wherever possible
- each unit comprises a relatively uniform vegetation type to which a single burning prescription can be applied.

Burning Prescriptions

Burning prescriptions were developed for each area identified as requiring burning for hazard reduction and/or habitat management. These prescriptions cover:

- vegetation type and fuel loads
- frequency and intensity of the prescribed burns
- sequencing of burns
- weather conditions
- equipment and personnel requirements
- ignition procedures and fire control
- associated bushland management works such as weed control
- record keeping.

Fire Management Assets

Fire management assets on the Meehan Range were located, and their current condition assessed. These include:

- vehicle access points, public roads and emergency vehicle access routes
- fire breaks
- potential water supply points.

The overall requirements for fire service vehicle access and fire breaks was assessed and rationalised. This included:

- identification of trails that need to be designated as emergency vehicle access routes and maintained
- new emergency vehicle access routes to improve access or replace existing trails
- a proposed inspection and maintenance schedule for emergency vehicle access routes.

Emergency vehicle access routes that need to be maintained were classified as follows:

- trail width; 1w - single lane, 2w - double lane
- trail access; alt - alternative access, dead - dead end
- fire service tanker type; L - light tanker only, H - light and heavy tanker.

Emergency vehicle access routes were mapped and prioritised for maintenance purposes. The criteria were:

High priority - major through routes and fire control lines

Medium priority - important link routes and fire control lines

Dormant - minor fire control lines and boundaries of fire management units.

A series of management procedures (MPs) were developed to standardise construction and/or maintenance of fire management assets. These include:

- emergency vehicle access route construction, inspection and maintenance
- emergency vehicle access route closure and rehabilitation
- construction and maintenance of stored water supplies.

Existing water points were mapped and coded according to their capacity, reliability, and accessibility for tankers. Locations for additional water supply points along emergency vehicle access routes were investigated and recorded, as required, to ensure that no point on an emergency vehicle access route will be more than 10 minutes drive from a water supply point based on the standard travel speed for each priority of emergency vehicle access route.

Bushland Management

The long-term effects of fire on the habitats of native flora and fauna in Australia are still imperfectly understood. However, available information on the fire ecology of plant communities, and indigenous flora and fauna species on the Meehan Range, has been incorporated into the strategy. Where the required information has not been available, recommendations in the strategy are based on the 'precautionary principle'. The 'adaptive management' approach recommended in this strategy will help overcome the lack of information on the long-term responses of the vegetation to fire. The monitoring and evaluation component of the strategy is designed to provide the information required to progressively refine the strategy to ensure it is achieving its desired outcomes.

Conservation of Biodiversity

Fire sensitive plant communities were identified and mapped, as well as plant communities that require periodic fire for their long-term survival.

A burning regime (fire frequency, season, extent and intensity) has been prescribed for each of the indigenous plant communities that are known to require relatively frequent fire to maintain their structure and floristics. These regimes aim to ensure the long-term viability of these plant communities, and are based on current information on the fire ecology of each community, and any species of particular conservation value known to occur within them.

Plant communities which are either fire sensitive, or have optimal fire frequencies longer than the duration of this strategy, have been excluded from the prescribed burning program.

Vegetation Mapping

Information on the distribution of the vegetation types on the Meehan Range was based on TasVeg 2000 with some corrections following fieldwork. Sufficient information was obtained to group the indigenous vegetation into the fire management categories in terms of the fire frequency thresholds required to maintain that vegetation type:

Threatened Flora

Information on the distribution of the threatened flora was taken from Tasmania Parks and Wildlife Service records. The threatened plant species are generally associated with specific plant communities, and therefore their potential distribution is likely to be reflected in the extent of suitable habitat. This information has been used when determining the appropriate fire regimes for the different vegetation types on the Meehan Range.

Recommendations in any recovery plans for threatened species on the Meehan Range have been used as the basis for fire management of the habitats of those species.

Fauna Habitats

Information on threatened fauna likely to occur on the Meehan Range was taken from Tasmania Parks and Wildlife Service records, and various other sources.

In general this fire management strategy aims to preserve existing fauna habitats on the Meehan Range. Where possible, critical habitat elements for threatened fauna species have been identified, and measures to reduce the risk of damage by fire included in the strategy. Areas recommended for fuel reduction burning for the protection of property have been investigated to ensure that sites which retain ecological complexity, (tree hollows, rotting wood etc) are excluded from prescribed burns, and protected from wildfires where possible.

Fieldwork Procedures

Fieldwork was undertaken at various times during 2005 and 2006. Issues addressed during the fieldwork included:

- current condition of the bushland, and major management issues
- fuel types, bushfire hazard, and fire threat
- fauna habitat types
- public infrastructure assets that may be at risk from fire
- landuse
- areas requiring exclusion of fire
- existing fire control assets, such as emergency vehicle access routes, dams and fire control lines.

Fuel loads were assessed in different vegetation types using the visual assessment procedure used by Forestry Tasmania (Appendix B). These were used to develop a general prediction of likely fuel loads based on vegetation type and time since the last fire.

Assessment References and Standards

The Tasmania Fire Service document *Guidelines for Development in Bushfire Prone Areas of Tasmania* (Tasmania Fire Service, 2005) was used as the standard for assessing the adequacy of existing fire protection measures for public assets on the Meehan Range.

Nationally, threatened flora and fauna are listed in the Commonwealth Environment Protection and Biodiversity Conservation Act, 1999. Threatened flora and fauna species in Tasmania are listed in Schedules 3 (endangered) and 4 (vulnerable) of the Threatened Species Protection Act, 1995. Rare species that are considered to be 'at risk' are listed in Schedule 5 of the Act. These three categories are defined in Section 15 of the Act as follows:

- "An extant taxon of native flora or fauna may be listed as **endangered** if it is in danger of extinction because long term survival is unlikely while the factors causing it to be endangered continue operating.
- A taxon of native flora or fauna may be listed as **vulnerable** if it is likely to become an endangered taxon while the factors causing it to be vulnerable continue operating.
- A taxon of native flora or fauna may be listed as **rare** if it has a small population in Tasmania that is not endangered or vulnerable but is at risk."

The Scientific Advisory Committee established under the Act advises on the listing and de-listing of species, threatening processes and the criteria to be followed in determining critical habitats.

The conservation value of a given species at the State level has been determined by the Flora Advisory Committee (1994), The Vertebrate Advisory Committee (1994), and the Invertebrate Advisory Committee (1994) which provide lists of species according to five categories of threat and rarity. Three of the conservation categories are the same as those used in the TSPA, the two additional categories are:

requiring monitoring - A species which does not meet the criteria for listing as a threatened species, but there is some doubt as to the long-term status of the species (fauna only).

unknown risk status - A species where there is insufficient information to determine conservation status.

Assessment of the statewide conservation value of forest communities is based on the criteria developed for the Regional Forest Agreement (PLUC, 1996). Regional conservation priorities are

based on the criteria developed by the Scientific Advisory Group for the RFA Private Reserve Program (CARSAG).

Stakeholder and Community Consultation

Prior to commencement of fieldwork, a letter and information leaflet was sent to all residents in the study area, explaining the aims of the fire management strategy and inviting them to attend a series of community forum meetings. A copy of this leaflet has been included in Appendix E.

Community forums were held at Risdon Vale, Cambridge, Rosny and Lauderdale.

Major landowners and the following government agencies were consulted directly during preparation of the fire management strategy:

- Clarence City Council
- Parks and Wildlife Service
- Tasmania Fire Service
- Transend
- Aurora Energy
- Telstra

Appendix C

Individual Property Fire Management and Awareness Kit

The kit is currently being prepared and tested and has not been included in this draft of the fire management strategy. When complete it will be sent to all residents on the Meehan Range.

Appendix D

Fuel Load Assessment Procedure

from

Forestry Tasmania (1996) ***Fuel Reduction Burning; Course Notes.***

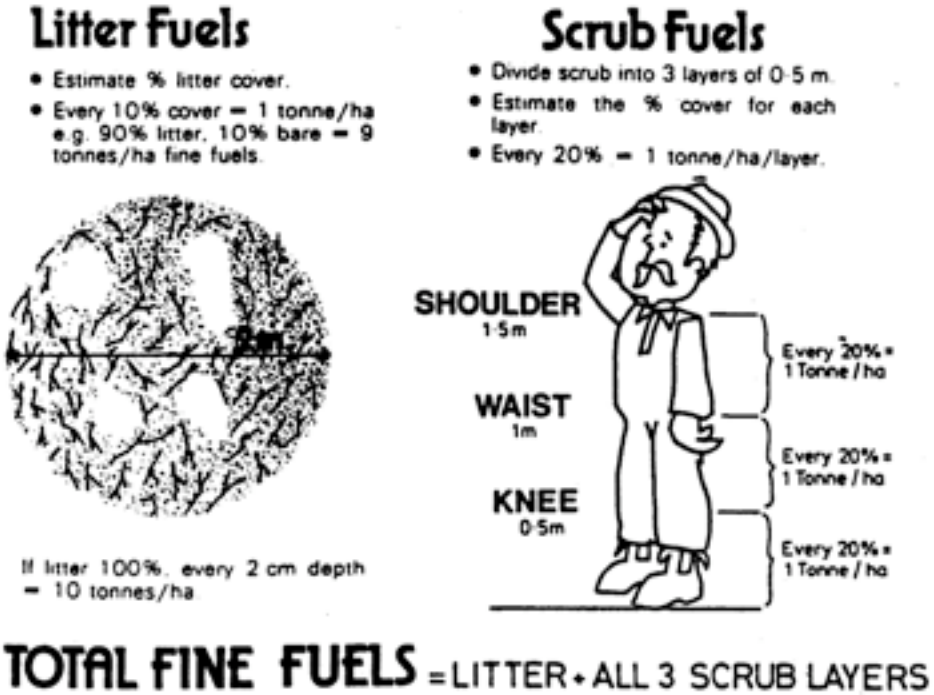
TAKING A CLOSER LOOK AT FUELS.

Fuels are being constantly produced by trees and scrub. In the dry forests decomposition can't keep pace with production so fine fuels accumulate to more than 10 tonnes per hectare only 10 years after the last burn. Although these fine fuels may stabilise at about this amount, heavy fuels, such as branches, logs and dead roots continue to accumulate until the next fire.

Fuel Quantity

Fuels up to pencil thickness (6mm) such as dead leaves, twigs and bark are called the 'fine' fuels and are the ones that have the greatest effect on fire spread. Doubling their quantity doubles flame height and rate of spread and quadruples fire intensity and damage on each hectare. It also quadruples the area burnt in a given time. Together this means that doubling the fine fuel quantity causes SIXTEEN TIMES the damage.

These fine fuels occur mostly as litter on the ground or as standing scrub and their quantity can be easily assessed without having to weigh anything. Just find a typical patch and estimate the % cover of litter and scrub in a circle about 2 m diameter.



Appendix E

Community Notification Letter

[Council, TFS and PWS Logos]

[Ratepayer]
[address]

Dear Sir/Madam

Meehan Range Fire Management Strategy

Clarence City Council, the Tasmania Fire Service and the Parks and Wildlife Service are preparing a Fire Management Strategy for the Meehan Range. The area that will be covered by the Fire Management Strategy is shown on the attached map.

Although the Meehan Range has not experienced a major bushfire in recent years, it is considered a high fire risk area. The aim of the Fire Management Strategy is to reduce the threat from wildfires to life, property and other assets (eg infrastructure, cultural and natural heritage values) on the Meehan Range. The Strategy will improve the ability of the Tasmania Fire Service and Parks and Wildlife Service to control fires in the area, and will include recommendations for hazard reduction as well as habitat management burning to help maintain plants and animals of conservation value on the range.

The Fire Management Strategy will include large areas of private property. As wildfires have no regard for property boundaries, the assistance of yourself and all other landowners in the area will be critical to the success of the Strategy.

The Fire Management Strategy will be prepared by a team of consultants including Axel von Krusenstierna, John Hepper, Andrew North and Catherine Nicholson. The consultants are very interested in any comments you may have regarding fire management on the Meehan Range, as well as information on past fires. A mail-back form is attached for your comments, or you may contact the consultants directly on 0412141955 (Axel von Krusenstierna), or email; avkem@optusnet.com.au.

As a 'stakeholder' in the Fire Management Strategy you will be able to meet and talk with the consultants, either on your property, or at a series of local community forums which will be held at the following venues:
Risdon Vale - 5.30 - 7pm Monday 4th July, Risdon Vale neighbourhood centre
Cambridge – 5.30 – 7pm Tuesday 5th July, Cambridge Hall

Rosny - 5.30 – 7pm Wednesday 6th July, Rosny Library
Lauderdale – 5.30 – 7pm Thursday 7th July, Lauderdale Hall

If the consultants need access to your property to carry out fieldwork during the project, they will contact you directly to discuss the purpose of their visit, and to arrange a convenient time. The consultants will not enter your property without first obtaining your permission. To allow the consultants to contact you easily, would you please provide a phone number on the attached form.

The Strategy will facilitate funding of fire management works on the Meehan Range and provide the basis for a cooperative approach to fire management in the area which will benefit all landowners and reduce the bushfire threat to lives and property. Please note that no fire management activities that may be recommended across privately owned land in the Fire Management Strategy will be carried out without the permission of the landowners involved.

Thank you for your assistance

Yours sincerely

Meehan Range Fire Management Strategy Project Manager

Appendix F

Tasmania Fire Service evacuation policy

TASMANIA FIRE SERVICE AND TASMANIA POLICE
POSITION ON EVACUATION AND PROTECTION
OF PEOPLE AND PROPERTY ENDANGERED BY BUSHFIRES.

Tasmania Fire Service having responsibility for the protection of life, property and the environment from fire, will make decisions in respect to dangers posed by bushfires. Tasmania Police has an obligation for the protection of life and property. Tasmania Fire Service and Tasmania Police will work together in the best interests of the community.

1. **Where adequate fire protection measures have been implemented, able bodied people are advised to remain in their homes during the passing of the fire front.**

   Exceptions are the aged, young children and incapacitated people. These people should leave but only well in advance of the fire when safe to do so, as should all others who wish to leave the area.

   People remaining need to be appropriately dressed and equipped to extinguish any fires that start in and around their house.

   Residents leaving should understand that they may not be able to return for some time because of closed roads.

2. **Where adequate fire protection measures have not been undertaken, the occupants of houses should relocate to a safe area well in advance of the fire for their own safety.**

   Advice on the need for relocation should be given by the senior fire officer present. The police should be requested to effect and control relocation to a safe area. Relocation should occur in a planned and safe manner co-ordinated by police.

   Able bodied people should be allowed to return to their homes as soon as possible after the main fire has passed. (Subject to 4).

3. **Where in the opinion of the most senior fire officer present or a police officer that a person's life is immediately at risk by them being in a particular location they will be advised to evacuate either by a fire officer or police officer. The police officer will seek the advice of the senior fire officer prior to making a decision to evacuate, except in the most urgent of circumstances. In the event that such advice is ignored a police officer may order them to evacuate and has the legal power to enforce that evacuation.**

4. **Road Closures.**

   - Roads will be closed when they become unsafe (either through smoke, falling trees/powerlines etc) and will remain closed until they return to a safe condition.
   - Police will close roads as requested by the most senior fire officer present to facilitate the fire fighting effort.
   - Whilst roads are closed, access should only be allowed for emergency service vehicles. Residents/media seeking access may only be allowed access where an appropriate escort can be provided e.g. fire or police vehicle. This action will depend upon the priorities of the emergency services at the time.

J B Gledhill
Chief Officer, Tasmania Fire Service

R McCreadie
Commissioner, Tasmania Police

Appendix G

Objectives, Precautions and Prescriptions for Management Burns