

Issue 6: Limit fire encroachment into non-target fire vegetation group

Non-target fire vegetation groups include rainforests, riparian, saltmarsh, coral cays, casuarina and foredune communities. These communities are often self-protecting if fire is used under appropriately mild conditions. If suitable conditions are not available, tactics such as burning away from the community may be required to protect them. Other areas to limit fire encroachment may include melaleuca and wetland communities when the peat is dry (refer to Chapter 5 [Issue 2]) or other fire vegetation groups which are not ready to burn.

Awareness of the environment

Indicators of fire encroachment risk:

- The fire-sensitive community is located within or adjacent to areas where frequent wildfires occur.
- Cyclone or logging damage where dry fuel is upon the ground or suspended in trees inside rainforests or other fire-sensitive vegetation.
- High-biomass grasses are invading riparian communities.
- The non-target community is upslope of the planned burn area.
- Melaleuca communities where the peat is dry.



A low-severity fire in *Melaleuca viridiflora* community. Ground saturation has been used to control fire entering the community.

Mark Parsons, QPWS, Sunday Creek (2010).



A low-severity backing fire under the right conditions will not scorch the riparian community. Fire will trickle downhill and self-extinguish before reaching the riparian zone. Kerensa McCallie, QPWS, Davies Creek, Dinden National Park (2010).



Surface water is used to control fire encroaching into saltmarsh. Mark Parsons, QPWS, Waterfall Creek (2010).

Discussion

- Under appropriate planned burn conditions with good soil moisture, or if a landscape-level mosaic is well-established it may not be necessary to employ specific tactics to protect fire-sensitive vegetation (as they tend to self-protect). If suitable conditions cannot be achieved specific tactics may be required to protect the non-target fire vegetation group. See the tactics at the end of this chapter.
- In some melaleuca and sedgeland communities, ensure suitable conditions to avoid peat fires prior to burning the surrounding area. Refer to Chapter 5 (Issue 2), regarding fire management guidelines.
- Because wildfire often occurs under dry or otherwise unsuitable conditions (e.g. there is no guarantee that peat swamps or rainforest litter will be moist), it has the potential to damage non-target and fire-sensitive fire vegetation groups. Proactive broad-scale management of surrounding fire-adapted areas with mosaic burning is one of the best ways to reduce the impacts of unplanned fire on these communities.

What is the priority for this issue?

Priority	Priority assessment
Very high	Planned burn required to maintain areas of special conservation significance .

Assessing outcomes

Formulating objectives for burn proposals

Every proposed burn area contains natural variations in topography, understorey or vegetation type. It is recommended that you select at least three locations that will be good indicators for the whole burn area. At these locations walk around and if visibility is good look about and average the results. Estimations can be improved by returning to the same locations before and after fire, and by using counts where relevant.

Select at least two of the following as most appropriate for the site:

Measurable objectives	How to be assessed	How to be reported (in fire report)
No scorch of margin of non-target fire vegetation group.	<p>After the burn (immediately or very soon after): visual estimation of percentage of margins scorched from one or more vantage points, or from the air.</p> <p>Or</p> <p>After the burn (immediately or very soon after): walk the margin of the non-target community or representative sections (e.g. a 100 metre long section of the margin in three locations) and estimate the percentage of margin scorched.</p>	<p>Achieved: no scorch.</p> <p>Partially Achieved: < 5 % scorched.</p> <p>Not Achieved: > 5 % scorched.</p>
Fire penetrates no further than one metre into the edge (if there is a well defined edge).	<p>After the burn (immediately or very soon after): visual assessment from one or more vantage points, or from the air.</p> <p>Or</p> <p>After the burn (immediately or very soon after): walk the margin of the non-target community, or representative sections (e.g. a 100 metre long section of the margin in three locations) and determine whether the fire has penetrated further than one metre into the edge.</p>	<p>Achieved: Fire penetrates no further than one metre into the edge.</p> <p>Not Achieved: Fire penetrates further than one metre into the edge.</p>

If the above objectives are not suitable, refer to the compendium of planned burn objectives found in the monitoring section of the QPWS Fire Management System, or consider formulating your own.

Fire parameters

What fire characteristics will help address this issue?

The below characteristics apply to fires in areas adjacent to the non-target fire vegetation group.

Fire severity

- A **low**-severity fire in adjacent fire-adapted communities will help achieve the objective of limited fire encroachment. A backing fire will help ensure good coverage (refer to the mosaic section below). If there are overabundant saplings in the area being burnt, a higher-severity fire may be required (in which case, appropriate tactics and moisture conditions will help limit scorch of the non-target areas).

Mosaic (area burnt within an individual planned burn)

- Consult the recommended patchiness for the fire vegetation group being burnt. Aim for the higher end of the recommended patchiness, as this will help mitigate the movement of wildfire into fire-sensitive communities.

Landscape Mosaic (a planned landscape level mosaic)

- Proactive broad-scale management of surrounding fire-adapted areas using mosaic burning is one of the best ways to reduce the impacts of unplanned fire on non-target fire vegetation groups and fire-sensitive communities.

What weather conditions should I consider?

When planning a burn it is important to be aware of weather predictions prior to and following burns so that undesirable conditions and weather changes can be avoided.

FFDI/GFDI: Refer to relevant fire vegetation group.

DI (KBDI): Refer to relevant fire vegetation group.

Wind speed: < 15km/hr

Soil moisture: If fuel moisture within a fire-sensitive community is insufficient or the fire-sensitive community is upslope from the planned burn, consider using the tactics outlined below.

What burn tactics should I consider?

Tactics will be site-specific and different burn tactics may need to be employed at the same location (e.g. due to topographical variation). During the burn tactics should be reviewed and adjusted as required to achieve the burn objectives. What is offered below is not prescriptive, rather a toolkit of suggested tactics.

- **Test burn** the site to ensure non-target communities will not be affected.
- **Do not create a running-fire.** When burning in adjacent sclerophyll forest during dry conditions use a low-intensity perimeter burn from the edge of low-lying communities to protect its margins.
- **Commence lighting on the leeward (smoky) edge** to establish the fire and promote a low-intensity backing fire. Depending on available fuels and the prevailing wind on the day, this may require either spot or strip lighting or a combination of both.
- **Afternoon ignition.** Planned burning in areas adjacent to non-target communities can be undertaken late in the afternoon. The milder conditions during this period will assist in promoting low-severity fires that trickle along the edge and generally self-extinguish, particularly during winter.
- **Limit fire encroachment into non-target communities.** Where the non-target community is present in low-lying areas (e.g. sedgelands), utilise the surrounding topography to create a low-intensity backing fire that travels down the slope towards the non-target community. If conditions are unsuitable (e.g. the non-target community is too dry to ensure the fire will self-extinguish on its boundary or it is upslope of a potential run of fire) use appropriate lighting patterns along the margin of the non-target community. This will promote a low-intensity backing fire that burns away from the non-target community.
- **Use strip ignition to draw** fire away from the non-target community's edge. When more than one line of ignition is used it can create micro wind conditions that can draw fire away from non-target areas. It is important to have safe refuges when undertaking this type of burning on the ground.
- **Broad-scale fire management.** Refer to the tactics in Chapter 1 for specific guidelines on establishing and maintaining a mosaic across large areas.

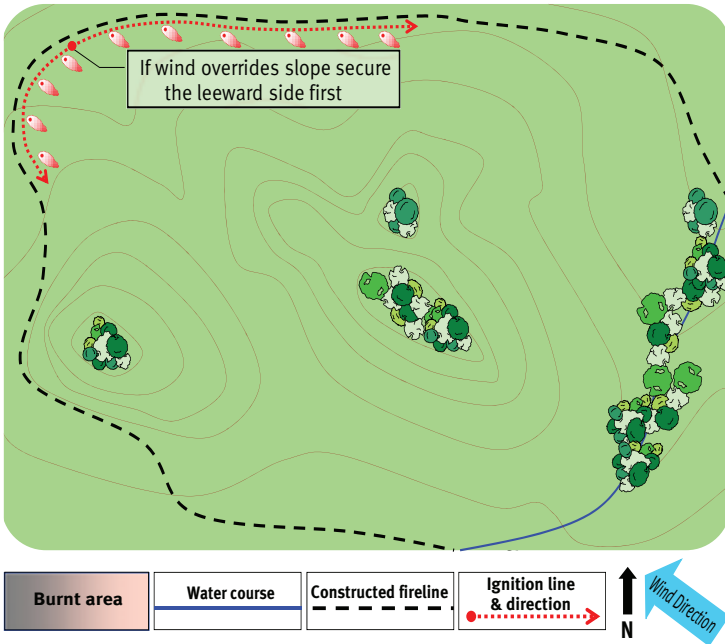


Figure 1: An example of an initial lighting pattern where wind is the dominating influence.

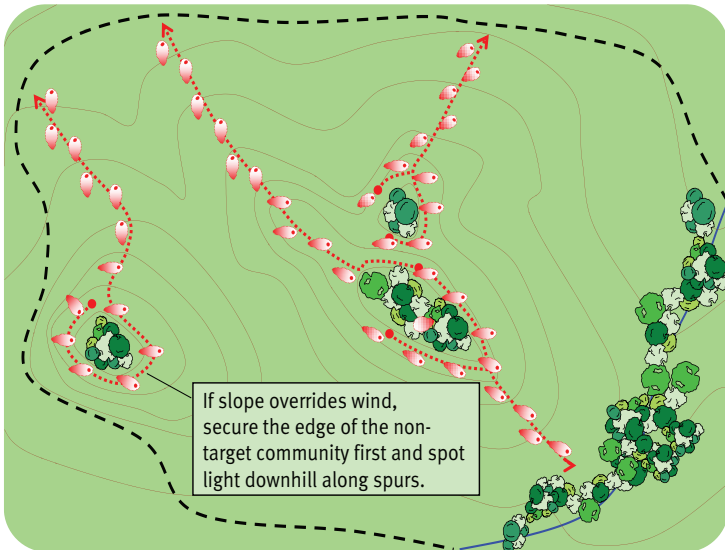


Figure 2: An example of strategic ignition adjacent to the non-target community and along spurs in an area where the slope is the dominant influence.

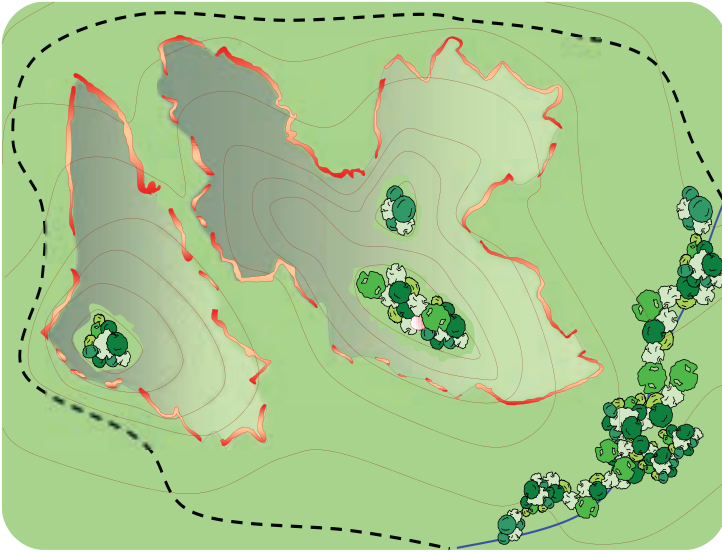


Figure 3: An example of the possible resulting burn pattern after burning from the edge of the non-target community.

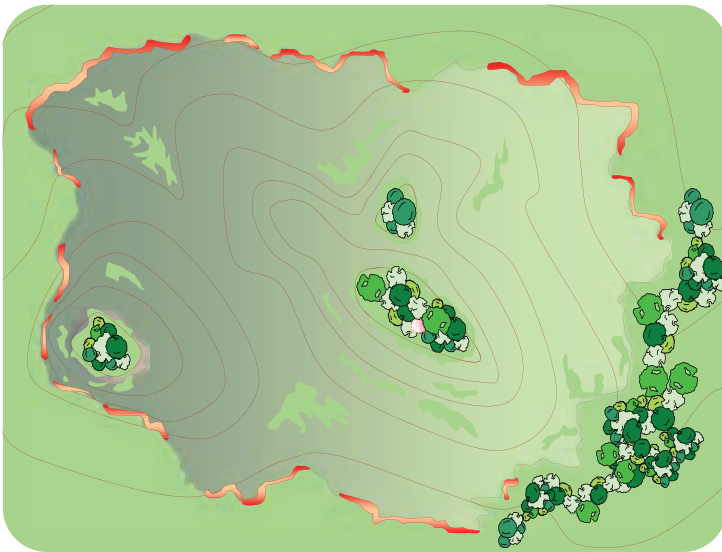


Figure 4: It was not necessary to burn back from the non-target community at the bottom of the slope, as the backing fire naturally extinguished against its edge due to greater moisture in the low-lying area.