The Muirburn Code 2017 – Supplementary Information 5

Planning For Burning

Contents

Objectives of Burning

Objectives should be decided at the start of the planning process and these should make it clear what burning is required to achieve. Reference should be made to Section 4 "*Planning for Muirburn"* and Supplementary Information 1 "*To Burn, to Cut or to do Neither*".

Choosing where to burn

A plan should be made well in advance to identify the areas that can be burnt with the wind in different directions.

The target for the area to be burnt each year will vary according to the rate of growth of the heather, and this will vary with a range of local factors. Whether or not it is possible to achieve the target will depend on the weather during the season, and the availability and efficiency of muirburn teams.

Generally, burning can take place after the heather has reached a height of at least 20cm; it is likely to take at least eight years for the heather to reach this height.

Care is needed to manage any smoke coming from the fire to ensure that smoke does not affect people, property or roads.

Consider places where cutting is possible and whether it could be used to support burning, or possibly to replace it.

To reduce the impact on the landscape, geometrically-shaped burnt areas should be avoided wherever possible. This is especially important when cutting firebreaks.

Choosing when to burn

Burning should only take place when conditions are suitable:

- Days when the forecast is for high winds are not suitable. The ideal wind is a gentle breeze, about 13-19 Km/hr (8-12mph) (Force 3: gentle breeze: leaves and small twigs are in constant motion; light flags are extended).
- If the vegetation is too dry (as assessed by a test fire), it becomes very difficult to control the fire, and these conditions should be avoided.

To ensure that burning does not take place in unsuitable conditions, a small test fire should be used, before the main muirburn fires are lit, to check:

- The fire behaviour, which will be influenced by the weather and the condition of the vegetation;
- The ease of suppression of the fire;
- Which fuels will burn; and
- The ability of firebreaks to hold the fire.

The test fire gives indications about the ignition plan / pattern. It might need to be changed if the test fire is too intense. For example, if on a south facing upslope, move to a north facing downslope.

Choosing how to burn

Burning should be carried out by a team of at least three people, and back-up help should always be readily available.

A decision about the number of people, equipment and other resources required to control the fire should be based on a risk assessment; this should take into account potential fire behaviour and identify appropriate mitigation measures to reduce the risks within the ability to control the fire.

The size of fires should be dictated by the conditions, interaction with other management (especially grazing) and the management objectives for the area. A fire front should not exceed 50m.

- Fire intensity and difficulty of control increase with headfire width. Fires become difficult to control if wider than 50m.
- The difficulty of control of a fire is also linked to the length of the perimeter of the fire and the fire intensity.

Burning is a risky activity and a fire must not be lit unless it is clear how it can be stopped. Firebreaks must be in place to control or stop the fire. These can be natural or prepared before muirburn takes place.

Additional fire suppression capacity could be required when burning vegetation that includes a significant amount of purple moor-grass *Molinia caerulea* (also known as “blow grass” or “flying bent”), as burning scraps of dead leaves can be lifted in the up-draught from the fire and drop to start new fires – this is called ‘spotting’.

Where and when not to burn

Burning must not take place in Protected Areas, except as part of an agreed management plan, and should not take place in Sensitive Areas or on peatland, except as part of an approved habitat restoration plan. These areas are defined in Section 3 of the Code.

The likely benefits of burning should be considered against an assessment of the risks of causing damage. In many areas, the benefits will be small and the risk of damage high. For example on ridges, or in exposed gullies, the wind clipped heather will not benefit from burning.

Avoid very dry conditions, as it will be more difficult to control a fire. Similarly, avoid days, or periods, when the wind will be above Force 3.

If grazing pressure is high, the value of burning must be assessed carefully. Vegetation regenerating after a fire is very attractive to grazing animals and this can lead to the sites of fires being heavily overgrazed and not being allowed to regenerate.

How to Reduce Risks

Muirburn teams must have an appropriate level of training. The Eurofire project's website includes some useful training information.

An appropriate Health & Safety Risk Assessment must be carried out before starting muirburn. The most significant risks are smoke and fires escaping control. To reduce the risk of a fire escaping control, consideration should be given to reducing the fire intensity – see the list of possible techniques below.

The wind should be blowing away from protected or sensitive areas when burning takes place.

Muirburn teams must wear suitable Personal Protective Equipment (PPE), which includes: fire retardant clothing and footwear, facemasks or goggles and gloves. Details of appropriate PPE can be found on the Forestry Industry Safety Accord website.

Communications equipment should be available.

A callout system to mobilise a back-up team should be available.

Someone with first aid training should be part of each muirburn team and a first aid kit should be available within each team.

Muirburn teams should drink fluids regularly and be aware of the symptoms of dehydration and heat exhaustion.

Reducing Fire Intensity: Techniques include:

- Burning down or across a slope,
- Burning on a north facing slope,
- Burning in shorter vegetation,
- Waiting for a damper day,
- Burning narrow fires,
- Using flanking or backing fires, and/or

- Using an ignition pattern that avoids a big headfire – Supplementary Information 4 considers some different ignition patterns.

Equipment

Ignition Equipment: Common devices include:
- Diesel wick burner
- Drip torch
- Gas burner

For details of these devices see EuroFire EF6 - Apply Vegetation Ignition Techniques.

Operators should read any manufacturers guidance and follow any safety instructions before operating an ignition device. All ignition equipment should be treated with caution, in preparation, transport and use.

For details of some different ignition techniques refer to Supplementary Information 4 - *Fire Behaviour*

Fire control:
Each member of the muirburn team should have a **fire beater**.
- There are many different varieties of fire beater, and some are more suited to different types of vegetation.
- If different vegetation types are likely to be encountered, different designs of beater should be available.

Water is very effective for controlling fires and many different types of portable and vehicle mounted sprayers and high-pressure fire-fogging pumps and tanks are available.
- Knapsack sprayers are a simple, portable means of putting out fires, but a means of re-supply is required, as each fill of water does not last long.
- Some form of water tank and pump combination can be used.
- An All Terrain Vehicle (ATV) with a small tank and a fire-fogging unit is very effective, but has limitations in very steep or rough terrain.
- Small pumps with sections of delivery hose can be very useful for refilling water tanks, avoiding steep slopes often found beside watercourses.

Water should be used carefully and levels of water in tanks should be checked on a regular basis, especially before each new fire is lit to make sure that there is sufficient water in reserve to extinguish each fire.

Water is used most efficiently when combined with other fire control tools, used by a team.

Sources of water should be reviewed in advance and access provided or improved where necessary; construction of ponds can be considered, if there no alternative access to water.

Other Equipment:
The use of powerful, commercial **leaf blowers** should be considered. Some organisations and estates have found that these are very effective at controlling fires.

- Leaf blowers have not been fully evaluated for use in muirburn operations, but the experience of operators in different parts of the world has been that they are safe and effective.
- A two-person team is recommended. One person operates the blower; the second follows with a beater to extinguish any re-ignitions and acts as a look out.
- When operating the blower, firefighting personal protective equipment, including eye and ear protection, should be worn.
- A current example of a suitable machine is the Stihl BR 600 Magnum Blower, but there are equivalent models available from other manufacturers.

Cutting equipment, including brush cutters, trailed and tractor mounted chain swipes and flails can be useful.

Limits of Fire Intensity:

Each tool or technique used to control fire has an upper limit of fire intensity, or flame length that it can control. The generally accepted limits are:

- Hand tools / leaf blowers 1.5m
- Pumped water 2.5m
- Helicopters 3.5m
- Back-burning 8.0m