



Prescribed Burning Code of Practice - Ireland



Department of
**Agriculture,
Food and the Marine**

An Roinn
**Talmhaíochta,
Bia agus Mara**

Disclaimer

The material contained in these guidelines is for general information purposes only and does not constitute legal or other professional advice. Specific legal or other professional advice should be sought on any particular matter. Any and all information is subject to change without notice. No liability whatsoever is accepted by the Minister for Agriculture, Food and the Marine for any action taken in reliance on the information contained in these guidelines.

Contents

Introduction	4
Section 1	Planning Prescribed Burning Operations.	5
Section 2	Preparing Prescribed Burning Operations	12
Section 3	Safety, Equipment and Resources	17
Section 4	Hazard Identification and Risk Assessment	20
Section 5	Contingency Planning	21
Section 6	Performing Safe Controlled Burns	23
Section 7	The Burn.....	30
Appendix 1	Contact Sheet for consultation.....	35
Appendix 2	Hazard Risk Assessment Form.....	36
Appendix 3	Burning Plan Blank Template.....	37
Appendix 4	Frequently Asked Questions.....	41
Appendix 5	Do's and Dont's.....	42

Credits:

Text: All text by Ciaran Nugent, Forest Service Inspectorate, Forest Service,
Department of Agriculture, Food and the Marine
Photos: All photos by Ciaran Nugent and Forest Service, unless otherwise indicated

Introduction

The Prescribed Burning Code of Practice provides basic information on planning, preparing and implementing safe, effective controlled fires for land management purposes. Prescribed or controlled fire has been used by humans for centuries to effect desired changes in vegetation conditions; enabling rapid removal of unwanted, dead or older, less productive vegetation from land and creating favourable conditions for new growth. Under controlled conditions, fire can be used to efficiently dispose of unwanted permitted residues such as hedge trimmings and cereal stubbles, and it has an important role to play in the management of plant disease and invasive species management, where certain plant residues may pose a challenge to safe disposal. Protective burning in proximity to forests, homes and other assets can be used to eliminate vegetation that may develop into dangerous wildfire fuels following dry weather patterns.

Fire is a powerful but dangerous tool - in the right hands and with the right application fire can enable rapid and cost effective treatment of unwanted vegetation; but fire needs to be used with skill and understanding if it is not to do more harm than good. The benefits of burning to the land must justify the effort and level of risk involved. Poorly planned or executed burning will cause long-term damage to soil and upland hydrology or hasten unwanted vegetation change that will in turn reduce productivity in livestock or wildlife habitats. Most importantly, burning under unsuitable conditions often leads to dangerous wildfire incidents. Uncontrolled burning of land leads to the destruction of already fragile habitats and wildlife, and can place human lives and property directly at risk. Apart from these direct risks, uncontrolled wildfire events lead to fire service resources being over-extended and diverted away from their main task of saving lives in our communities. Safety and consideration for neighbours and wider communities must therefore be paramount in planning and implementing safe, responsible controlled burning operations.

Prescribed burning should only be carried out by an appropriate number of personnel with adequate training, knowledge and experience in managing safe, controlled burning operations. Prescribed burning has been described as both an art and a science. The science of fire behaviour is well established, but the art of controlled burning can only be learned by personal experience on the ground. Where the majority of landowners are concerned, it is recommended that supervision of prescribed burning should be entrusted to experienced practitioners, who have the knowledge required to burn safely and properly.

In considering land management objectives, landowners must carefully consider whether burning is appropriate in the first instance. In certain circumstances, there are safer, equally effective alternatives to burning available, including mechanised treatment and livestock grazing programmes. In many instances the application of a combination of all three will have the greatest beneficial impact, as part of an integrated land management system. Critically, alternative methods to burning like mechanical swiping, mowing or flailing may require less personnel and organisation. Also, such methods may be less subject to weather influences and therefore easier to undertake between 1st September and 28th February, which is the legal period for the control of growing vegetation on uncultivated land.

When correctly planned and applied, prescribed burning techniques can rapidly and cost-effectively produce beneficial effects to vegetation. These benefits range from improvement in grazing conditions, enhancement of biodiversity and wildlife habitats and control of vegetation accumulation in upland areas that would otherwise provide the fuel for dangerous wildfires. The Code of Practice outlines measures that can be applied to ensure that prescribed burning operations are carried out safely and effectively, thus minimising the risk of wildfires occurring and preventing damage to both rural communities (lives and property) and wildlife habitats.

Section 1 Planning Prescribed Burning Operations

The term prescribed or controlled burning is used to describe the planned and deliberate use of fire as a land management tool.

Prescribed burning can be defined as the controlled application of fire to a predetermined area, at a specified time of day and season, and under specified weather and fuel conditions, so as to ensure that the intensity, rate of spread and extent of spread of the fire meet planned land management objectives, and comply with legal, environmental and social constraints.

In contrast, a wildfire is any uncontrolled fire in combustible vegetation that occurs in the countryside or a wilderness area. Wildfires differ from controlled fires by their extensive size, the speed at which they can spread out from the original source, their potential to change direction unexpectedly, their ability to jump gaps such as roads, rivers and firebreaks, and their propensity to disrupt and threaten human safety, conservation and economic land management objectives.

In implementing prescribed burning operations, careful planning and preparation will ensure that the objectives can be achieved, without causing wildfire events that may put lives and property at risk.

In planning a safe and effective controlled burn, landowners must bear the following points in mind:

1.1 Consider the total amount of land that needs to be burnt

Where is it desired to burn?

What is the envisaged outcome of burning?

Is burning the only method of producing the desired effect?

What are the constraints to burning on and around the target area?

1.2 Consider alternatives to prescribed burning

Is Burning Really Necessary?

Are there better alternatives to prescribed burning for the land in question, such as mechanised treatment or livestock grazing that can be explored?

1.3 Be aware of the Law

Several legal constraints apply to controlled burning and individuals planning to burn must be aware of these to avoid **the risk of prosecution and/or penalties under the Department's Support Payments for Farmers (e.g. Single Payment, Disadvantaged Areas)**. Individuals found engaged in illegal burning activity may be subject to heavy penalties. Specific legal measures that affect the use of fire for land management are contained within the following relevant legislation:

Wildlife Act, 1976
Wildlife (Amendment) Act, 2000
Birds and Habitats Directive
Air Pollution Act, 1987

The Safety, Health and Welfare at Work Act, 2005 and Safety, Health and Welfare at Work (General Application) Regulations, 2007
Forestry Act, 1946
Waste Management Act, 1996
Waste Management Act, 2008
SI No. 286 of 2009 – Waste Management Regulations
Fire Services Act, 1981
Fire Services Act, 2003
Criminal Damages Act, 1991

In addition to penalties arising from breaches of the above legislation, Local Authorities may impose a charge on the owners of property, or the beneficial occupiers of the property, in relation to fire service costs, where Fire and Rescue Services have to be called to deal with a fire.

Landowners in receipt of Support Payments for Farmers (e.g. Single Payment, Disadvantaged Areas) should be aware that illegal or irresponsible burning activity may constitute a breach of the Good Agricultural and Environmental Conditions (GAEC) terms of these schemes and penalties may be imposed by the Department of Agriculture, Food and the Marine (DAFM).

In relation to the Wildlife Act, 1976 as amended by the Wildlife (Amendment) Act, 2000, landowners should be aware that under Section 40(2) it is lawful to cut or grub isolated bushes or clumps of gorse (furze or whin), or to mow or cut isolated growths of fern (bracken) in the ordinary course of agriculture or forestry.

1.4 Planning a Burn

Once it has been decided that burning is warranted, careful planning, including consultation with all interested parties, agencies and neighbouring landowners is essential in developing a prescribed burning plan.

Burning should only be carried out in accordance with a written burning plan. The plan should address all relevant issues raised by this code and relevant legislation. Annual burning should take place within the context of a long-term rotational burning plan developed by the landowner for the area in question.

1.5 Identify Fire Free Areas

The first step in planning must be to identify areas where burning would be harmful or simply a waste of resources. Areas within which burning should not take place are listed below:

- Hedgerows – fire is not an acceptable management option for hedgerows.
- Designated Habitats (e.g. Special Protection Areas – SPA's, Special Areas of Conservation – SAC's, Natural Heritage Areas – NHA's) - unless by agreement with the National Parks and Wildlife Service (NPWS).
- Under or adjacent to power lines – smoke can conduct electricity and cause arcing of electricity to the ground under high tension lines, with the risk of electrocution to workers.
- Woodland – prescribed fire is not an acceptable management option.
- National Monuments - fire can damage stone features etc.
- Thin eroding soils where fire may accelerate soil loss further.
- Steep slopes – fire will spread rapidly uphill and loss of control may result.

- Summits and ridges – thin soils, steep slopes and wind conditions will make fire behaviour too unpredictable for controlled burning.
- Where bracken is present – see Section 6.12 for bracken control recommendations.
- Areas with exposed peat, peat ‘hags’ (exposed eroded peat banks), erosion gullies, or exposed rock.

In addition to the above, landowners should also ensure that the planned burning is compatible with the requirements of REPS/AEOS, where applicable, and the Cross Compliance/Good Agricultural and Environmental Condition requirements attaching to Support Payments for Farmers.

1.6 Burning Rotations

Once it has been decided that land should be burned, a burning rotation programme can be developed based on vegetation growth levels. These rotations are greatly influenced by variables such as vegetation growth rates, weather, and grazing intensity levels. The following parameters can be applied for use in determining burning rotations for upland vegetation:

- As a rule of thumb, you should base burning rotations on how fast vegetation grows. For example, assuming uniform vegetation growth for a given area, if you choose to burn when heather reaches 30 cm (12 inches), and you estimate it will take around 20 years for plants to reach this height, you should have a 20-year rotation, with an average of 1/20th of the area being burnt each year.
- On deep peat (i.e. more than 50 cm / 20 inches deep) aim to burn on long rotations of 15 to 25 years. If heather growth rates are unusually fast, more frequent burning may be appropriate. In such cases, try to keep rotations at 12 years or longer. Bear in mind that wet surface and peat conditions are required on deep peat to prevent possible combustion of the underlying peat, and longer supervision times should be provided for.
- Avoid rotations of less than 10 years on heather sites.
- Different areas of your land may suit different rotations – e.g. if growth rates, vegetation types or management objectives vary. Again, this is an area where the knowledge and experience of local landowners should apply, in addition to general guidelines regarding burning rotations.
- For smaller areas, the proportion of land to be burned could be increased to ensure that economy of scale is achieved for planned and safer burning operations; alternatively the burning rotation can be shortened. Where vegetation growth is not uniform, the landowner should decide on an appropriate burning rotation, based on local knowledge and experience.
- Only burn grassland and grass moorland if dead plant material is widespread as a result of under-use by grazing stock. Ideally, increase summer grazing intensity as an alternative to burning (being careful to avoid overgrazing). If dense vegetation becomes a persistent problem, try burning small areas over a longer rotation (but no more frequently than once every 5 years) to encourage better use of the new growth.

- In extensive upland areas, it may be necessary to burn firebreaks in extensive grass moorland on an annual basis where protection of property and wildfire mitigation is a concern.

1.7 Gorse (Furze) and broom

Gorse (*Ulex Europaeus*) ('Furze' or 'Whin') is a fire adapted species. There is significant evidence to suggest that destruction of furze by fire merely accelerates the rate of spread and seed activation. Both gorse and broom can produce quite a large amount of seed per plant. Large gorse bushes readily resprout from the stem base and germination of new seedlings from dormant seed in the soil is greatly encouraged by burning. Carefully planned mechanised removal is more effective than fire for long term control of gorse and may be more cost effective in the long run.

Gorse/furze and broom are flammable all year round and burn quickly with intense heat. Older crops of gorse with high bushes are notoriously difficult to control in wildfire situations and it may not always be possible to safely treat these using fire. Due to their fine nature, these fuels burn fiercely and with a long flame length making fire behaviour difficult to predict. Attempts at burning extensive areas of gorse/furze or broom scrub/scrubland will be difficult to control, and should not be attempted without significant advance preparation of firebreaks and other control measures such as mechanised treatment. The presence of significant areas of gorse (furze/whin) may present a barrier to using prescribed fire on some sites to all but the most experienced of practitioners. Isolated small patches of gorse should only be burned if there is no risk of fire spreading, and where the limits of the burn can be securely contained by installation of firebreaks or wet lines. Where these situations exist, small gorse patches should be burned annually to regulate growth and fuel loads pending more permanent treatment.

If in doubt, seek the advice of an experienced burning practitioner, or your local Fire and Rescue Service, prior to planning your burn.

1.8 Consultation

Good quality consultation with neighbours and state agencies is central to any responsible burning operation. Neighbours, statutory bodies (Fire and Rescue Service, Coillte, National Parks and Wildlife Service) and other interested parties who may be affected should be informed of an intention to carry out burning activities. Consultation may also present valuable opportunities for co-operation between landowners, and in some cases state agencies, particularly where burning on commonage is concerned. As well as giving due notice of intentions, it is an opportunity to reduce costs and risks through co-operative use of equipment and manpower and to the benefit of all parties involved.



Notification to authorities and consultation with neighbours will allow everybody to prepare in advance, should difficulties be encountered.

A written burning plan should be prepared for this purpose. This plan should include details of where and when it is proposed to burn, and descriptions of the conditions under which it is proposed to carry out the burning. The plan will also include the objectives of burning and details about the available levels of access, personnel, equipment, communications and health and safety precautions.

Maps detailing the location and extent of the proposed burn and access routes should also be prepared and included in the plan. The location of the proposed burn should be marked clearly on a 1:50000 Discovery series map and the actual land delineated clearly on a 6" OS map or orthophoto (aerial photo) at suitable scale to suit the area to be treated. Copies of the plan should be forwarded to the local Fire and Rescue Service, local Garda Station and National Parks and Wildlife Service, where applicable. Where archaeological features are present the National Monuments Division of the Department of Arts, Heritage and the Gaeltacht, should be informed and advice sought. In many cases, prescribed burning will take place on the same farm or commonage year-on-year, and the same basic maps and plan details can be used for multiple burning seasons, and updated and modified as required each season.

Appendix 1 contains a Contacts Sheet which may be useful when preparing to consult the relevant parties in regard to a Prescribed Burn.

1.9 Legal Notifications

These notifications are required by law and must be provided by the landowner undertaking prescribed burning to avoid possible prosecution.

Under Section 39 of the Wildlife Act, 1976 (as amended), if you intend burning within one mile of a forest which you do not own, you must notify your local Garda Station and the forest owner, who has the right to object by counter-notice, at least 7 days in advance in writing.

Within Designated Areas (SPAs, SAC's, NHA's) the National Parks and Wildlife Service must be notified and Notifiable Action authorisation obtained.

1.10 What to consider when planning burning:

Objectives	Clearly state what the fires are to achieve: e.g. forage improvements, turbary management, fuel load reduction. Different fires may have different objectives.
Mapping	<p>Prepare a map showing the location of the area where burning will be performed, in relation to surrounding lands, woodlands, dwellings, etc. Note names and contact details of neighbouring landowners. Show access tracks and water points clearly.</p> <p>Map the desired boundaries of the fires. Indicate the order in which they will be burnt, the presence of hazards and critical areas such as dwellings. Highlight any topographic features that could affect fire behaviour and potentially introduce a hazard, e.g. steep slopes or wind exposed sections. Indicate control lines, firebreaks, assembly points, water points, access tracks suitable for heavy fire fighting vehicles, access tracks suited to smaller vehicles. Indicate land ownership and contact details.</p>
Fire free areas	Describe and map the identity of all public roads, buildings, and any other areas which fall under the definition of fire free areas. Do not burn on or in proximity to these areas and allocate resources to ensure these areas do not fall victim to the prescribed fire.
Weather	Describe the weather conditions under which the burning will be carried out. Suitable weather should permit vegetation to burn, but at a slow and predictable rate. Describe what weather information will be needed, and from where, how and when it will be received. Record when and how often weather information will be checked.
Smoke management	Identify what precautions need to be taken to avoid danger to users of public roads, airports, or to avoid general public nuisance and possible health risks in accordance with the Air Pollution Act, 1987.
Fire control	Describe how each fire will be lit, how its spread will be controlled, and how the fire will be extinguished.

Equipment	List available equipment. Check that equipment is in working order and identify if spares are required. Ensure adequate supply of suitable protective clothing and equipment.
Personnel	List the names, contact numbers and duties of all individuals involved in the burning. Ensure that all personnel are fully aware of what they are to do, and how to do it.
Control lines	Describe any special work that may be required to create firebreaks, including machinery and any materials required.
Health and safety	Describe health and safety procedures for burning activities.
Contingency plans	Describe procedures to be followed in the event that a fire escapes control. Describe emergency procedures to be followed in the event of accident or injury to operatives or bystanders.
Record consultation	List all those who should be consulted and discuss plans with them. Identify and seek approval from owners / occupiers / agents as appropriate and from any relevant statutory bodies involved.
Communications	List the contact numbers of all key personnel, neighbours and Fire Service. Ensure adequate mobile phone service is available on the site, or arrange alternatives e.g. radio.
Briefing	Ensure that all personnel have copies of and understand the objectives, safety and emergency procedures, and the map of planned fires for each day of the burning.
Insurance	Ensure that you have suitable and adequate insurance cover for the task at hand and discuss your intentions with your insurance provider. Employer's Liability insurance should be checked to see that it covers prescribed burning activity, especially if employees or sub-contractors are likely to be involved. Illegal burning activity may invalidate insurance and leave the landowner or operatives open to personal liability claims.

DO NOT TAKE THE RISK

Section 2 Preparing Prescribed Burning Operations

2.1 Supervision

Do not attempt any burning in the absence of sufficient trained personnel and experienced supervision.

Competent supervision of prescribed burning operations is critical, and all prescribed burning operations should be supervised by competent, experienced prescribed burning practitioners.

All burning operatives should work under the direction of a designated burn supervisor, and this must be made clear to operatives prior to commencement of burning operations. In most cases the landowner will take on the role of supervisor. Responsibility for health and safety and control of prescribed fires rests with the burn supervisor. Remember, availability of suitable personnel will have a major bearing on the size of the operation that can be safely carried out. The burn supervisor overseeing burning should ensure that all personnel are familiar with their role and what is expected of them. A contingency plan in the event of emergency should be developed and made clear to all personnel involved.

Landowners/managers should familiarise themselves with the requirements of The Safety, Health and Welfare at Work Act, 2005 and Safety, Health and Welfare at Work (General Application) Regulations, 2007 and ensure compliance with legislation.



Coillte Supervisor briefing operatives in advance of burning at a prescribed burning exercise

Prescribed burning is physically demanding and adequate refreshments and rest breaks must be catered for. Operatives should be issued with clean drinking water and drink regularly to avoid dehydration. Alcoholic beverages should not be consumed prior to or during the burning operation.

Good communications are vital to coordinating a burn operation. Radio or mobile phone communications should be available to all members of the burn team.

Site supervision includes post burning supervision for a number of hours after operations have ceased, to ensure that all fires are fully extinguished and do not pose a risk of re-flare and wildfire outbreak.

2.2 Identify the limits of the area to be burnt on the ground.

Where is it desired to burn?

How will the fire be limited to this area?

Will firebreaks need to be created?

Are there natural firebreaks or features that can be used as boundaries?

The area burning at any given time should be minimised and fully manageable. Where terrain permits safe use of a tractor mounted flail or mower, firebreaks can be rapidly swiped or cut in vegetation. Such firebreaks must be cut immediately before lighting the fire. The chain swipe makes a swathe of mashed up vegetation and litter, which, provided it does not dry out, will not ignite readily.



Forest firebreak in upland terrain. Note the almost total absence of fuel within the treated area. This firebreak would still be vulnerable in windy conditions due to the presence of light grasses on both sides, but could be reinforced using water. Effectiveness of firebreaks such as this can be greatly enhanced by additional protective burning to remove fuel along its length, and by provision of 5m (about 16 feet) long 30cm (12 inches) deep mini reservoirs along the lowermost firebreak edge.

If firebreaks are mown/cut rather than swiped, the cut vegetation must be removed from the firebreak if it is to be effective. Mown firebreaks can be made even more effective if combined with damping down with water. Clean vacuum tankers and even simple knapsack sprayers can be used for this purpose. Terrain capable sprayers can be readily improvised using portable pressure washer units and water tanks mounted on tractors or all-terrain vehicles. Adequate water should be readily to hand in the event of a change in conditions or for use along critical fire-free boundaries.



Mechanically prepared firebreak (Flail Mown) in extensive upland Heather terrain

For optimum control to be implemented, not more than 0.5 of a hectare (about 1.25 acres) should be burning within control lines at any one time, in order to minimise smoke and maintain fire control, particularly in upland grassland situations. Individual fires must be supervised at all times.

Do not conduct prescribed burning operations in strong wind conditions.

2.3 Personnel

Ensure that there is sufficient manpower available for the planned burn. For a typical burning operation in ideal weather conditions, a minimum of five people is required, in addition to the supervisor. There should be at least one person for every 5-10 metres (approx 16 – 32 feet) of fire line, depending on the size of the area to be burned, and its particular land management objectives.

It is also good practice to have a few 'reserves' on hand to call upon in the event of problems or an unexpected change in burning conditions. Landowners should consult a competent burning practitioner in their area to determine their particular manpower requirement for burning on their own lands.

People with known health problems, such as high blood pressure, heart conditions, certain allergies, and respiratory diseases, must not participate. Prescribed burning is a strenuous, stressful, and demanding job that requires good physical conditioning. Should a medical emergency occur, some people will have to be pulled away from fire control to provide emergency assistance. The result will be reduced ability to control the fire, and possible loss of control leading to wildfire unless operations are stood down. If accident or illness does occur, immediately extinguish the fire and summon assistance. It is useful to have mountain rescue contact details to hand should such an eventuality arise. Again, always ensure

there is good quality mobile telephone reception available on the site. If no mobile telephone service is available, alternative communications arrangements such as a radio link to farmhouse or neighbours dwelling should be put in place.

Co-operation between neighbours is vital in implementing effective burning. Neighbours should work together and share manpower resources to best effect. Remember the '*Meitheal*' ways of old. As in the past, landowners should organise *Meitheal* groups for prescribed burning in conjunction with neighbours.



Prescribed burning requires sufficient manpower if it to be accomplished safely and correctly.

2.4 Determine where and when individual areas will be burnt or protected

Individual areas to be burnt (burn plots) should be clearly marked out on a 6" OS map or DAFM orthophoto (aerial photo). This will help ensure that effort and resources are applied most efficiently and effectively.

Identify on the ground areas where there is the potential for loss of control or damage to neighbouring assets. Such areas may consist of steep slopes where fire control may be problematic or particularly flammable vegetation such as bracken or gorse scrub patches.

These areas should be considered fire-free and adequate measures taken in advance of burning to ensure they remain so.

2.5 Ensure that there are effective firebreaks/control lines

Identifying firebreaks is an essential part of fire planning - no fire should be started until you are certain where and how it will stop.

Firebreaks must be 2.5 times the planned flame length. Flame length will be a function of vegetation type and condition, in addition to prevailing weather conditions at the time of burning. Typically, firebreaks for most moorland/bog types need to be at least 6 meters (about 20 feet) wide to reliably stop a fire under controlled burning conditions. Be aware that some forms of vegetation (e.g. Purple Moor Grass) can give rise to windborne firebrands and cause fires to cross firebreaks in strong wind conditions.

2.6 Insurance

Individuals intending to burn are strongly advised to discuss their intentions with their insurance providers, and ensure that adequate insurance cover is in place for the operations involved.

Employer's Liability Insurance should be checked to see that it covers prescribed burning activity if employees or sub-contractors are likely to be involved in burning. Farm Safety statements should be available on the day of burning and should take into account controlled burning activities. Hazard Identification Risk Assessments (see Appendix 2) must be completed prior to burning operations and all operatives and contractors made aware of all risk issues and mitigation measures to be undertaken.

Illegal burning activity may invalidate insurance and leave the landowner or operatives open to personal liability claims. Do not take the risk. Follow the code. Only burn in suitable conditions, with sufficient manpower, equipment and experienced supervision.



You are responsible if a fire gets out of control. Have adequate liability insurance in place.

Section 3 Safety, Equipment and Resources

Safety is central to carrying out responsible prescribed burning operations. Poorly managed operations or ignorance of health and safety measures will most likely lead to soil, wildlife and property damage and possibly even injury or death. Approximately 10 people are known to have died in accidents relating to land burning in Ireland since 2000. Even in well-managed burns, accidents can occur.

Before, during and after every burn, safety must be the foremost consideration.

Plan operations well in advance, follow basic burning and safety procedures, wear proper protective clothing, and be prepared for changes to weather and fuel conditions.

Equipment and materials for extinguishing the fire must be on hand before burning begins. Much of the equipment required is readily available on farms, or can be improvised from available local resources.

3.1 Personal Protective Equipment

Fire retardant clothing is required for all workers exposed to or using fire, (see picture below). Face visors BS 2092 and BSEN1166 are essential. Safety goggles are also advised. Where prolonged exposure to smoke is likely, suitable masks are advised. Operatives should also be issued with leather gloves and fire retardant overalls (welders overalls BS EN 470-1 are ideal for this purpose).

Fully stocked first aid kits and, where available, suitably trained first aid personnel are also required on site during operations. Adequate clean drinking water must also be made available during the burn.



Correct Personal Protective Equipment must be worn at all times by all operatives and supervisors.

3.2 Fire Handling Equipment

Operatives should be equipped with suitable beaters that can be used to scrub and beat out the fire. Beaters can be made using a suitable handle with a rectangle of rubber conveyor belting securely attached at one end using coach bolts and broad washers (see picture below). Beaters with long handles of 3-4 metres (about 10 – 13 feet) long reduce heat exposure for those using them, however shorter handles of 2 metres (about 7 feet) make transport easier. Spare beaters must also be on hand in the event of breakage or in the event that extra personnel are required to maintain control of the fire.

Standard shovels can be used for controlling fires in an emergency, but may expose operatives to greater heat than long-handled beaters. Grain shovels are useful for scooping water from bog holes etc. onto fires, in addition to their large surface area for beating, but ensure longer handles are fitted first.

Mechanised equipment should be in good working order, serviced and fit for purpose. Remember Murphy's Law where reliance on mechanised equipment is concerned, and have a plan B to hand.

All fire control equipment must be checked and tested by the burn supervisor to ensure it is in full working order before any fires are lit.

On completion of the operation, equipment should be checked and serviced ready for future use, or in the event of emergency.



A suitably well-equipped prescribed burning operative and equipment.

3.3 Water

Water is essential for rapid effective fire suppression and control in the event of mishap, and for creating and maintaining effective control lines in fuel vegetation.

Before any burning is started, a suitable water source must be secured, checked and monitored to ensure sufficient supply at the time of burning. There may be environmental constraints on some water bodies; if in doubt consult with the relevant Local Authority, Inland Fisheries Ireland or National Parks and Wildlife Service.

Slurry tankers (vacuum tankers), as commonly found on farms are ideal for water transport where terrain permits, but should be thoroughly clean of animal wastes and residues to prevent pollution. Fittings should be obtained for the attaching of a small diameter hose to tankers for rapid aimed delivery of water onto target areas.

Small knapsack sprayers can be adjusted to deliver a steady 2mm stream of water and used to extinguish burning material in cracks and crevices that beaters cannot reach. This is critical in preventing peat fires and re-ignition problems. Knapsack sprayers can also be used to cool problem fires and enable them to be tackled more safely with beaters. Ensure that units that may have been used for herbicide application are carefully washed and safe for use in this manner, and are free from any chemical residues.

Portable water pumps or pressure washers mounted on a 4X4, tractor, ATV or quad bike can be used to wet down vegetation or extinguish unwanted fires. Petrol driven pressure washers are ideal for use as improvised foggers. Fine high pressure sprays use water more efficiently than coarse sprays or water jets, and can also be used to cool coarse fuel fires to within controllable limits.



High pressure pumps, such as pressure washers can be mounted on ATV's or tractors and make short work of laying down control lines using water.

Section 4 Hazard Identification and Risk Assessment

All employers have a duty of care towards employees and their health, safety and welfare while in a place of work. The Safety, Health and Welfare at Work Act 2005 and Safety, Health and Welfare at Work (General Application) Regulations 2007 place a heavy emphasis on hazard/risk assessment as a core element of health and safety management in places of work. Heavy penalties exist where employers are found to have breached this duty of care through action or negligence, and employees are harmed or injured as a consequence.

4.1 A hazard is anything that can potentially cause harm:

Identifying workplace hazards requires a systematic survey of the workplace in order to identify potential hazards present that may cause injury or harm to workers and others present. Employers are obliged by law to identify potential hazards present and to identify measures aimed to improve equipment and working methods to reduce the risk or likelihood of accidents occurring.

Some obvious hazards on prescribed burning sites:

- The fire itself
- Smoke from prescribed fires
- The physical environment of upland terrain
- Weather conditions
- Machinery used – e.g. tractors, quad bikes, etc.

Some less obvious hazards: - The root cause of many accidents

- Dehydration of operatives
- Fatigue of operatives
- Unforeseen change in fuel conditions due to terrain, wind effects, weather
- Simple trips and falls caused by uneven terrain
- Poor planning, preparation and supervision of burning

4.2 Risk Assessment is the analysis of the risk of injury to employees in the workplace from work place hazards.

Risk itself is a combination of the **SEVERITY** of the hazard and the **LIKELIHOOD** of the harm or injury occurring. Risk Assessment may be a simple, subjective and qualitative statement expressing the severity of the risk as low, medium or serious following a consideration of the likelihood of the danger.

It is strongly advised that individuals who wish to carry out prescribed burning incorporate this activity into their farm or workplace Safety Statements, and seek the assistance of competent Health and Safety advisors in completing Hazard Identification and Risk Assessment for prescribed burning and associated activities. A sample hazard identification and Risk Assessment record form is included in Appendix 2.

Section 5 Contingency Planning

5.1 Have a backup plan

Even with the best planning and preparation, things can still go wrong. It is important therefore to have a back-up plan for all likely eventualities.

Back-up personnel should be available in the event of emergency and be contactable by mobile phone. Everyone taking part in the operation must be contactable by either mobile phone or radio. When planning operations, check the coverage and quality of mobile telephone services in the area prior to burning.

Contact details for the local Fire and Rescue Service, Forest Managers (Coillte and private), and Conservation Rangers of the National Parks and Wildlife Service should be readily to hand, and these individuals should have been previously notified during the consultation phase. See Contacts Sheet at Appendix 1.

In the event that Fire and Rescue Services need to be mobilised, their job will be made much easier if you have provided them with a copy of the burning plan, and have updated this as required to suit the relevant conditions. They will need information about ownership boundaries, assembly points, watercourses, suitable reservoirs and the location of tracks and access roads. It is important to state whether access routes can be used by fire tenders or smaller vehicles.

All of this information should be clearly identified on the burning plan maps.

On arrival, the Fire and Rescue Service will take control of the incident and may request the assistance of those present, where operatives are suitably trained and equipped.

- 5.2 LACES** is a system used by professional fire fighters to ensure crew safety and welfare when attending wildfire incidents that can be readily adapted by those engaged in prescribed burning activities to prevent and mitigate against mishap and risk to operators. It stands for:

LOOKOUT
AWARENESS
COMMUNICATIONS
ESCAPE
SAFETY ZONES

Lookout

One member of each burn team should always be assigned as a lookout, his or her function is to watch the fire perimeter and ensure that it remains in control at all times, and that treated areas are fully extinguished and pose no risk of re-ignition.

Awareness	The burn supervisor and all team members should be aware at all times of how the fire is progressing and how it is likely to react to the fuels in its path. Careful attention should be paid to changes in weather conditions and topography which might give rise to a change in fire behaviour. Attention must also be paid to the burning crew itself and signs of illness, fatigue or dehydration that may develop and affect fire control capabilities.
Communications	Good clear communications must be maintained between burn team members and between burn teams and the Fire Supervisor at all times. Clear communications links to the emergency services should be available, in the event they are required.
Escape	Clearly defined, un-obstructed safe escape routes should be agreed in advance and all team members and attendees made aware of them. In the event of loss of fire control, these routes should lead to a place of absolute safety, downhill, and down wind.
Safety Zones	<p>Pre-determined safety zones should be designated in advance of operations. These should be areas containing the minimum or devoid of fuel. They should be large enough to accommodate everyone and close enough to be effectively utilised via escape routes. Recently burned areas, metalled tracks or rock outcrops etc. are ideal for use as safety zones.</p> <p>Safety zones must be fuel free Avoid locations downwind of fire Avoid locations upslope of fire Ensure all personnel are accounted for Summon the emergency services without delay</p>

Section 6 Performing Safe Controlled Burns

A general understanding of the separate and combined effects of several weather, vegetation and terrain factors on fire behaviour and fuel condition is essential to plan and execute a good prescribed burn. Only burn when weather and fuel conditions permit safe containment of fire and maintenance of cool, controllable burning conditions.

Carefully assess weather and vegetation (fuel) conditions that influence behaviour, predictability and above all, safety and containment of the fire. At all times during the burn be aware of changes in weather and fuel conditions. Based on these constraints, aim to conduct burning in a safe and controlled manner likely to minimise the risk and nuisance to operatives and other people, and in a manner that does not harm the productivity of the land being burnt.

- 6.1 Wind direction, wind speed, relative humidity, temperature and precipitation** are important elements to consider because these factors influence fine fuel moisture and fire behaviour. Because weather and fuel factors interact, an experienced prescribed burner can conduct a successful burn even with one or more factors slightly outside the desired range—but only as long as they are offset by other factors.
- 6.2 Wind direction** strongly influences the direction a fire takes, and is critical in correctly orienting pre-burn preparations such as fire breaks and control lines. Wind direction is the most critical element where back-burning for protective purposes is being employed. Wind direction may also influence air humidity levels that influence fine fuel flammability.
- 6.3 Wind speed** strongly influences the intensity of fire behaviour, in particular, the length of the flame produced. Operators should seek to maintain a low but steady flame less than 0.5 metres (approx. 1.5 feet) long. Moderate sized flames of 0.5 to 1.5 metres (approx. 1.5 to 5 feet) will be increasingly difficult to control. Flames in excess of 1.5 metres may degenerate controlled operations to wildfire status. Light, steady winds are ideal to maintain a steady rate of burn and to disperse smoke from operators.

Do not attempt prescribed burning where wind speeds exceed 20km/h or about 12mph (moderate breeze, Beaufort Force 4). General weather forecasts are not suitable for wind speed determination – use on site observations to determine actual wind speed at the planned location.

Be advised that fires can create their own draught that may affect direction irrespective of wind speed and direction.

The Beaufort Scale

Beaufort number:	Kilometres per hour:	Description of conditions / effects
0	<1	Calm / <i>smoke rises vertically</i>
1	1 – 6	Light air / <i>smoke drifts in wind</i>
2	7 – 12	Light breeze / <i>leaves rustle, wind felt on face</i>
3	13 – 19	Gentle breeze / <i>small twigs in motion, light flags extended</i>
4	20 – 30	Moderate breeze / <i>dust, leaves raised, small branches move</i>
5	31 – 39	Fresh wind / <i>small trees sway</i>
6	40 – 50	Strong wind / <i>large branches move, difficult to use umbrellas</i>
7	51 – 62	V. Strong wind / <i>whole trees in motion</i>
8	63 – 74	Gale / <i>branches break, difficult to walk</i>
9	75 – 87	Severe gale / <i>damage, chimney pots and slates removed</i>
10	88 – 102	Storm / <i>trees uprooted, structural damage</i>
11	103 – 117	Violent storm / <i>widespread damage</i>
12	>118	Hurricane / <i>widespread damage, rare</i>

The Beaufort Scale provides a useful method of estimating wind speed in relation to everyday reference points

6.4 Relative Humidity (RH) is a measure of the amount of water vapour in the air (at a specific temperature) compared to the maximum amount of water vapour air could hold at that temperature, expressed as a percentage value.

It influences fine fuel condition and flammability, and significant differences can occur in fuel conditions throughout the day as a consequence.

It is influenced by sun, wind and site topography in much the same way as the process involved in saving hay. However, prescribed burning is often best carried out early in the day before vegetation gets a chance to dry out completely. Prescribed burning should not be attempted where RH values are lower than 50%, typically in the afternoon. Burning should not commence late in the evening and should never be attempted at night.

6.5 Temperature influences relative humidity and the combination of these factors in turn greatly influences fuel condition and burning performance. Handheld weather devices are available and are invaluable for providing an accurate indication of wind speed, wind direction, air temperature and relative humidity at prescribed fire sites.

6.6 Precipitation levels in the preceding days before burning is commonly used to determine general fire risk and is useful in determining safe conditions for prescribed burning. It is traditional in many areas to carry out prescribed burning where rain is forecast as imminent and this practice has many merits. Fine fuels can dry out to flammable condition very rapidly following rain, while sufficient moisture is retained in surface vegetation, soil and litter to protect soil and roots from damage.

6.7 The Met Eireann Fire Weather Index (FWI) provides a daily indication of fire danger to land managers based on rainfall activity and provides a simplified


indication of the cumulative effects of rainfall, relative humidity and temperature on fine fuel conditions in vegetation. The system issues an automatically generated assessment and five-day forecast of fire risk for the main synoptic meteorological stations in Ireland, based on observed weather patterns in the preceding five days, in particular rainfall, wind speed and relative humidity. Five classes of fire weather risk assessment are used:

- 1- **Very Low** – Conditions have been persistently wet, vegetation will not ignite and wildfire risk is zero
- 2- **Low** – While vegetation can be ignited, there is a low risk of fire spread
- 3- **Moderate** – Vegetation is flammable with slow predictable fire spread likely
- 4- **High** – Vegetation can be easily ignited and fire spread is rapid
- 5- **Extreme** – Fire spread is rapid and dangerously unpredictable following ignition

Fire weather warnings from Met Eireann also can be used to provide a useful indicator of burning conditions. FWI index **classes 2 and 3 are most suited** to prescribed burning. Burning is rarely possible under class 1. Fire Weather Index conditions are available at www.teagasc.ie. Note that conditions will vary from site to site, even at the same general FWI ratings and ground observations should always determine if conditions are suitable for burning.

FIRE WEATHER INDEX

KNOW THE RISK!



BLUE - VERY LOW FIRE RISK

GREEN - LOW RISK

YELLOW - MODERATE RISK

ORANGE - HIGH RISK

RED - EXTREME RISK

UP-TO-DATE FIRE WEATHER INFORMATION IS AVAILABLE FROM:

<http://effis.jrc.ec.europa.eu/>
www.teagasc.ie
www.met.ie

All landowners concerned with fire should be aware of the daily Fire Weather Index rating for their region issued daily by Met Eireann, and available from a number of sources

Burning should be carried out before conditions reach FWI 4 or 5 status. Burning at class 4 and 5 FWI conditions should not be attempted due to wildfire ignition risk.

ALWAYS CHECK WEATHER BEFORE BURNING.

IF IN DOUBT, DO NOT BURN.

6.8 Vegetation conditions

The purpose of prescribed burning is to influence vegetation development to a desired state, be it for improved grazing, fire protection or game and biodiversity management. Considering vegetation as potential fuel, the quantity, type and arrangement of biomass present will have a great influence on fire behaviour, in particular flame length and intensity. Knowledge and experience of vegetation performance as fuel is therefore vital in predicting and controlling fire behaviour in prescribed burning.

The most critical types of fuels for fire management are fine fuels, such as grasses, heather foliage, mosses etc. and dead material (necromass). Typically fine fuels are defined as being less than 6mm ($\frac{1}{4}$ inch) in diameter. Due to their fine nature, these fuels can rapidly absorb or release moisture, depending on prevailing weather conditions, hence the importance of relative humidity in determining prevailing wildfire risk. Typical fuel species encountered in Irish upland conditions include Heather (*Calluna vulgaris*), Bell heather (*Erica cinerea*), Gorse (*Ulex europaeus*, *Ulex galii*), Purple Moor Grass (*Molinia caerulea*), Deer Grass (*Trichophorum caespitosum*), Bracken (*Pteridium aquilinum*) and Rush species (*Juncus spp.*). In most upland habitats, heather will be the preferred species for biodiversity and game development, and is makes for better winter sheep grazing.



Fine Fuels, such as heather, mosses, gorse and grasses largely define the intensity of a fire, in conjunction with wind and moisture conditions.

- 6.9 Heather Species** require careful management where burning is concerned, if burned too frequently they will die off, and if burned too infrequently they will deteriorate in terms of quality. The aim of heather burning is to interrupt the natural life cycle of the plant in order to retain young heather shoots which are nutritionally superior to old heather for grazing animals and bird species such as Red Grouse (*Lagopus lagopus*), a priority conservation species which depends entirely on heather for all dietary and habitat requirements. Controlled heather burning as a

management strategy encourages new growth to sprout from existing heather plants, removes dead material and recycles nutrients.

If heather is not managed it takes on a very dishevelled appearance and eventually breaks down in patches and dies after about 25 to 30 years. By this stage, heather is of very little value for grazing animals and birds. The most productive heather moorland is one with a patchwork of heather at different stages of maturity.

Heather can usually be burnt once it has reached a height not less than 30cm (approx 12 inches) (See Section 1.6 where burning rotations are outlined). Care is required in stands of tall (rank) heather to maintain flame length within manageable limits. The presence of large amounts of coarse fuels in large woody plants creates difficulty in controlling the intensity and behaviour of such fires and the risk of fire escape and degeneration to wildfire status. Over-hot fires will cause long term soil damage. Burning in damper weather conditions may alleviate these issues somewhat but it is preferable and safer to treat taller heather mechanically using a flail or swipe mower, where terrain permits.

Always allow some patches of heather (and other heathland vegetation) to remain and grow to over 40 cm (about 16 inches) to increase structural diversity and provide havens for wildlife. Aim for such areas to cover 10% or more of the overall land area.

Mixed heather/grass communities should be managed with a preference for heather conservation over grasses as the objective, preventing the encroachment of less nutritious coarse grasses such as *molinia*, and maintaining site productivity.

Landowners are strongly advised to seek NPWS advice on habitat and conservation issues during the planning phase.



Accumulations of mixed fine fuels such as presented here, will cause very intense fires in dry conditions that are difficult to control. Fuel mixtures like this should only be burned where moisture conditions allow a slow burn rate and fire progression.

- 6.10 Gorse Species** are problematic for prescribed burning due to their highly flammable and unpredictable nature as fuel, particularly European Gorse (see section 1.7). Additionally, as a fire adapted species, burning stimulates gorse seed to germinate, and will result in greater spread of gorse at the expense of more preferred species for grazing or game management.

Prescribed burning of extensive areas of gorse should be avoided in the absence of suitable preparation and installation of effective control lines. Alternative mechanical methods should be used to grub or mulch stands for long term effective control, subject to agreement with NPWS or DAFM as applicable in designated or REPS areas.

- 6.11 Molinia, Juncus and other Grass species** will burn easily and rapidly when dead in spring, and can dry out to flammable condition in a short time following rain where wind conditions permit. A coarse grass, Molinia has colonised many upland areas thanks to improper burning techniques and the consequent decline of heather populations. It provides inferior grazing nutrition, and can be very problematic for fire control due to its propensity to spread burning windborne fragments in windy conditions. Burning of Molinia should therefore be confined to low or calm wind conditions if fire control is to be maintained. Water should be used liberally to create and maintain control lines and burn sizes limited to ensure burn control is maintained.

- 6.12 Bracken** spread will be further stimulated by burning, and controlled burning of dead bracken is notoriously problematic, due to its high flammability. As such, bracken should not be controlled using fire. Where bracken is an issue for grazing management, mechanical / chemical control measures should be employed.



Bracken responds rapidly to fire, having deep complex root systems. This growth has taken place only two weeks following burning.

- 6.13 Topographical impacts** on fire behaviour are highly significant. Rate of fire spread will increase with increasing slope and where the site aspect allows preheating and accelerated drying of fuel through direct exposure to sunlight.

Fire has a natural tendency to burn uphill, even where wind direction may suggest otherwise. On even ground in still conditions, fire will burn with equal intensity in all directions, but the rate of fire spread is likely to double for every 10 degrees of slope increase encountered, drawing the fire uphill rapidly, and with increasing intensity. As the fire progresses uphill, fuel ahead of the fire is brought closer to the flame and preheated and dried. This fuel will then burn with higher intensity, and longer flame length, accelerating the process and making rate of spread harder to predict, and control of the fire more difficult to maintain safely.

For this reason, prescribed burning on steep slopes should not be attempted, and burning on moderate slopes confined to periods where fuel moisture content is sufficiently high to permit control of the fire to be maintained safely. When burning on moderate slopes, the fire should only ever be set at the top of the slope against a suitable control line and allowed to burn downhill. Fires lit mid slope will burn both up and down slope at different rates and will result in an uneven treatment of vegetation, making behaviour prediction and control of the fire difficult.

FOR SAFETY REASONS, IT IS ABSOLUTELY CRITICAL THAT NO FIRE SHOULD EVER BE LIT ON SLOPES BELOW WHERE OPERATIVES ARE WORKING.

DIAL BEFORE YOU BEGIN BURNING

REMEMBER – YOU MUST ALWAYS TELEPHONE THE REGIONAL FIRE CONTROL CENTRE BEFORE YOU BURN, STATING CLEARLY YOUR INTENTION TO CARRY OUT A CONTROLLED BURNING OPERATION, GIVING YOUR NAME, CONTACT TELEPHONE NUMBER, THE EXACT LOCATION AND THE EXPECTED DURATION OF THE PLANNED OPERATION FOR THE DAY IN QUESTION.

The Regional Fire Control Centres can be contacted via the normal Emergency Services telephone numbers:

999 / 112

DIAL WHEN YOU ARE FINISHED BURNING

TELEPHONE AGAIN WHEN OPERATIONS ARE COMPLETED AND ALL FIRES ARE FULLY EXTINGUISHED.

Section 7 The Burn

- Do not burn growing vegetation on land not yet cultivated between 1st March and 31st August in any given year. This will constitute an offence under the Wildlife Acts and you may be prosecuted.
- Do not burn in the absence of competent, experienced supervision.
- Do not burn unless conditions are suitable for safe containment of a fire – FWI 2-3 (Green/Yellow) and light winds (see section 6.7). Do not burn if FWI is 4-5 or in strong wind.
- Do not burn unless soil, moss and peat underlying the vegetation to be burnt is wet to touch and will not catch fire, so as to avoid damage to soil and plant roots and seeds.
- Do not burn unless you know how and where the fire will be extinguished.
- Do not burn unless you have sufficient personnel, equipment and water resources to contain the fire.
- Implement LACES safety regime (see section 5.2) for all personnel on site.
- Burning should not commence late in the evening and should never be attempted at night.
- You are obliged to notify the appropriate Regional Fire Control Centre of your intention to burn, commencement and cessation times etc., on the day of burning. You are obliged to again notify the Fire Control Centre when burning operations have ceased, and provide adequate supervision of the burn site until you are satisfied that the fire is completely extinguished and presents no risk of re-ignition.

7.1 Conduct safe, controlled burns

Do not burn unless you know how the fuel will behave under the prevailing conditions and you can be certain where and how the fire will be extinguished. Before committing to a larger burn, the fire supervisor should conduct a small burn to assess the behaviour of fuel, wind etc. All operatives present should be on hand to control this fire until the fire supervisor is satisfied as to prevailing conditions and the capacity of the team to control a wider fire front under these conditions.

7.2 Ensure there are sufficient firebreaks.

The width of firebreaks should be at least two and a half times the expected flame length.

7.3 Keep fires cool.

Aim to remove the dwarf shrub canopy but leave behind a proportion of “stick”. Try not to damage the moss or litter layer or expose the bare soil surface. In practice this means not burning when conditions are too dry and mosses and litter on the ground surface are in a flammable state. These layers should be damp to the touch and protect the soil from heat and flames. The objective should be to

produce a relatively fast but controllable 'head fire' that will burn off fine surface vegetation without over-heating surface soil layers.



Prescribed burning operative igniting vegetation using a kerosene drip torch. Petrol or other highly flammable accelerant should never be used to start fires.

7.4 Keep fires small

Keep burns small and well distributed. No more than 0.5 of a hectare (about 1.25 acres) should be burning at any one time. Small burns are easier to control, so as to achieve the desired treatment effect and avoid soil damage. Where grazing improvement is concerned, burn widths of up to 50 metres (approx 54 yards) are advised, however for game management, the width of burned patches may be only 30 metres (about 33 yards) or smaller, where a finer mosaic of heather heights and age classes is desirable.

An active **fire front** should be not more than 5 to 10 metres (approx 16 to 32 feet) per person, depending on conditions and land management intentions.

Small controlled fires burn cooler and do not damage soil and soil flora and fauna as much as larger more intense fires, and retain soil productivity. Small burns are therefore safer and easier to control, since ease of control is related to fire intensity and this is usually greater in larger fires. However, it should be noted that smaller fires require more labour inputs than if the same area is to be burnt in larger patches. Individual fires should not be allowed to exceed 50 metres (about 54 yards) wide if adequate control of the fire is to be maintained safely.

7.5 Conduct quick cool burns.

Burn only in light wind speed conditions. The objective is to produce a relatively fast and light 'head fire' that will burn off dead vegetation and fine fuels only. Avoid

intense burning of coarse woody material that will increase risk of soil exposure and erosion, or vegetation will take much longer to recover or change adversely.

7.6 Fires must always be supervised.

Always have sufficient manpower available. The fire must be extinguished before supervision ceases with someone being responsible for a final check. All equipment and persons involved in the burning operation should be under the control of one person.

7.7 Do not burn if the flames are likely to be too long.

This will depend on fuel load and weather conditions. If flames start to exceed 3 metres (about 10 feet) length while you are burning, proceed with great caution – such fires can be difficult to control. They are also likely to be too hot, risking environmental damage.

7.8 Burn with the wind.

Ideally the wind should be blowing downhill. If this is not possible burning on the level is the next-best option and failing this on a gentle upward slope. The aim is to develop a relatively fast, yet cool and controllable ‘head-fire’, driven by the wind that will quickly burn off fine vegetation without damaging soil and surface layers beneath.

7.9 Only burn against the wind using great care.

Backburning should only ever be used to prepare fire-breaks in protective burning or fire suppression. Such fires move slowly and can produce overly hot burns, which can cause lasting damage to vegetation and increase the risk of soil exposure and erosion. On peat soils, use extreme caution when backburning to minimise the risk of irreversible damage to the vegetation and combustion of the underlying peat.

7.10 Control the flanks of a fire

Control the flanks at the desired width leaving the fire front to spread in a predetermined direction. Consider having at least one flank defined by a natural or prepared firebreak.

7.11 Always protect sensitive areas

Burn away from sensitive areas or protect them with fire breaks. Burning close to sensitive areas should only be carried out with a gentle and constant wind, blowing away from the sensitive area.

7.12 Extinguish fires before sunset

Always ensure that fires are properly extinguished by dusk. Ensure all operatives are accounted for before departing the site.

7.13 Notify the Regional Fire Control Centre

Notify the Centre that the operation has ended and the fire is fully extinguished.

7.14 Check and debrief operatives.

Ensure warm clothing and refreshments are available to prevent exposure to cold once the fire is out and high levels of physical exertion are no longer required. The burn supervisor should briefly discuss and review the day’s activities and experiences with operatives for the benefit of future performance.

7.15 Make and keep a record of events

The landowner and burn supervisor (if they are not the same person) should review the performance of the burning operation against the plan, and make a written record of the area actually burned, noting any particular elements that were learned during the burn; e.g. fire behaviour in different vegetation types or slopes; wind behaviour; etc. Records such as these will be invaluable in planning future burning operations in the same area.

Disclaimer

The material contained in these guidelines is for general information purposes only and does not constitute legal or other professional advice. Specific legal or other professional advice should be sought on any particular matter. Any and all information is subject to change without notice. No liability whatsoever is accepted by the Minister for Agriculture, Food and the Marine for any action taken in reliance on the information contained in these guidelines.

Acknowledgements

The Department of Agriculture, Food and the Marine wishes to acknowledge the contribution of the following individuals and organisations to the development of the Prescribed Burning Code of Practice.

Mr. Tom Fadian, Chairman, Hill Farming Committee, Irish Farmers' Association
Mr. Davey Keith, Co. Donegal, Irish Farmers' Association
Mr. Matthew McCreehan Hill Farming Committee, Irish Farmers' Association
Ms. Helen Lawless, Mountaineering Ireland
Land and Forest Fires Working Group
Irish Uplands Forum
Kerry Fire and Rescue Service
Mr. Eugene Curran, Forest Service
Mr. Pat Farrington, Forest Service
Mr. Pat O' Sullivan, Society of Irish Foresters
Northumberland Fire and Rescue Service
England and Wales Wildfire Forum
Mr. Michael Bruce, Glen Tanar Estate, Scotland
Wicklow Uplands Council
Fire and Emergency Planning Directorate, Department of Environment, Community and Local Government
Ms. Cara Doyle, Wicklow Uplands Council
Professor Matt Carroll, School of Natural Resource Sciences, Washington State University
Mr. Tom Shanahan, Teagasc
Mr. Tom Houlihan, Teagasc
Dr. Aine Ni Dhubhain, School of Agriculture, Food Science & Veterinary Medicine, University College Dublin
Mr. James McCarthy, Kerry County Chairman, Irish Farmers Association
Mr. Ted Horan, Glenflesk, Co. Kerry
Mr. Patrick O Connor, Gortalee, Co. Kerry
Mr. Adrian Kelly, Chief Fire Officer, Co. Clare Fire and Rescue Service
Mr. Eamonn Woulfe, Chief Fire Officer, Co. Louth Fire and Rescue Service
Mr. Mike Flynn, Asst. Chief Fire Officer, Co. Kerry Fire and Rescue Service
Mr. John Jackson, Donegal Woodland Owners Association
Donegal Woodland Owners Association
Muckross Community Council, Killarney, Co. Kerry
Mr. PJ Bruton, Society of Irish Foresters
Birdwatch Ireland
Mr. Des Crofton, National Association of Regional Game Councils
Ms. Julia McMorrow, Department of Geography, University of Manchester
Mr Tim O' Donoghue, National Parks and Wildlife Service, DAHG
Mr. Thomas Jensen, Coillte Teoranta
Irish Environment Network

Appendix 1 Contacts Sheet

Landowners should complete this contacts sheet using local information.

FIRE STATION

GARDA STATION

NPWS RANGER

**DEPARTMENT OF
AGRICULTURE**

CO. COUNCIL

COILLTE FORESTER

OTHERS

Appendix 2 Hazard Risk Assessment Form

Prescribed Burning Risk Assessment

[illegible]

Appendix 3 Burning Plan Blank Template

PRESCRIBED BURNING PLAN

This plan must be completed in advance of the intended burning period, and a copy forwarded to your local Fire and Rescue Service. It is always advisable to discuss your burning requirements in advance with Fire and Rescue Service when planning operations. A copy of the plan must be kept to hand at all times by the burning supervisor during prescribed burning operations.

AN GARDA SIOCHANA MUST BE NOTIFIED IN WRITING 7-35 DAYS IN ADVANCE OF PRESCRIBED BURNING OPERATIONS.

1. LOCATION DETAILS

LANDOWNER NAME

ADDRESS

TELEPHONE NUMBER

MOBILE NUMBER

LOCATION OF PLANNED BURN

(MARKED IN RED CIRCLE ON MAP)

PURPOSE OF PRESCRIBED BURN

Tick as appropriate

<input type="checkbox"/>	Grazing/Forage Improvement
<input type="checkbox"/>	Fuel Load Reduction
<input type="checkbox"/>	Habitat Management
<input type="checkbox"/>	Protective Burning
<input type="checkbox"/>	Permitted Wastes Disposal

TOTAL AREA INTENDED TO BURN

_____ HA or _____ ACRES

PLANNED BURNING DATES

_____ TO _____

REQUIRED WEATHER CONDITIONS

REGIONAL COMMUNICATIONS CENTRE
(Fire Control Centre) TELEPHONE NUMBER

NEAREST GARDA STATION AND
TELEPHONE NUMBER

**ONLY BURN WHEN PREPARATIONS ARE COMPLETE AND CONDITIONS ARE SAFE TO BURN
IF IN DOUBT, DO NOT BURN**

PRESCRIBED BURNING PLAN

This plan must be completed in advance of the intended burning period, and a copy forwarded to your local Fire and Rescue Service. It is always advisable to discuss your burning requirements in advance with Fire and Rescue Service when planning operations. A copy of the plan must be kept to hand at all times by the burning supervisor during prescribed burning operations.

AN GARDA SIOCHANA MUST BE NOTIFIED IN WRITING 7-35 DAYS IN ADVANCE OF PRESCRIBED BURNING OPERATIONS.

2. PERSONNEL REQUIREMENTS

BURN SUPERVISOR NAME

CONTACT DETAILS

FIRST AIDER NAME

NUMBER OF OTHER PERSONNEL

NAMES AND CONTACT DETAILS

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

3. EQUIPMENT

LIST REQUIRED EQUIPMENT REQUIRED –
WATER TANKERS, ATV'S, PUMPS, ETC.

**ONLY BURN WHEN PREPARATIONS ARE COMPLETE AND CONDITIONS ARE SAFE TO BURN
IF IN DOUBT, DO NOT BURN**

PRESCRIBED BURNING PLAN

This plan must be completed in advance of the intended burning period, and a copy forwarded to your local Fire and Rescue Service. It is always advisable to discuss your burning requirements in advance with Fire and Rescue Service when planning operations. A copy of the plan must be kept to hand at all times by the burning supervisor during prescribed burning operations.

AN GARDA SIOCHANA MUST BE NOTIFIED IN WRITING 7-35 DAYS IN ADVANCE OF PRESCRIBED BURNING OPERATIONS.

4. NEIGHBOURING LANDOWNER DETAILS

Details of Neighbours who may be affected by prescribed burning operations and smoke emissions. Ensure all neighbours are fully notified in advance of prescribed burning operations. FOREST/WOODLAND OWNERS MUST BE NOTIFIED IN WRITING 7-35 DAYS IN ADVANCE OF PRESCRIBED BURNING OPERATIONS – IT IS THE LAW.

NEIGHBOURING LANDOWNER 1

CONTACT DETAILS

NEIGHBOURING LANDOWNER 2

CONTACT DETAILS

NEIGHBOURING LANDOWNER 3

CONTACT DETAILS

WHERE ADDITIONAL NEIGHBOURING LANDOWNERS ARE INVOLVED ATTACH DETAILS ON SEPARATE PAGE

**ONLY BURN WHEN PREPARATIONS ARE COMPLETE AND CONDITIONS ARE SAFE TO BURN
IF IN DOUBT, DO NOT BURN**

PREScribed BURNING PLAN

This plan must be completed in advance of the intended burning period, and a copy forwarded to your local Fire and Rescue Service. It is always advisable to discuss your burning requirements in advance with Fire and Rescue Service when planning operations. A copy of the plan must be kept to hand at all times by the burning supervisor during prescribed burning operations.

AN GARDA SIOCHANA MUST BE NOTIFIED IN WRITING 7-35 DAYS IN ADVANCE OF PRESCRIBED BURNING OPERATIONS.

SMOKE MANAGEMENT

Describe how smoke emissions will be managed to avoid potential dangers to the public e.g. road users, airports etc.; and how smoke nuisance can best be minimised e.g. suitable wind direction, vegetation conditions etc.

--

CONTINGENCY PLANNING

In the event of a loss of control of prescribed burns or other accident, the emergency services and relevant land management authorities must be notified immediately. The task of Fire and Rescue Services will be made much easier where they have advance knowledge of the terrain and access features of the area in question, hence the need to ensure that your local Fire and Rescue Service receive a copy of your plan in advance.

Where control of a prescribed fire is lost, fire service mobilisation should be requested using the normal 999/112 Emergency Service system, and not via the Regional Communications Centre.

Other Useful Contact Details:

National Parks And Wildlife
Service Conservation Ranger

--

Department of Agriculture/
Forest Service Inspector

--

Coillte Forest Manager

--

Private Forestry Managers

--

Health and Safety Authority

--

Mountain Rescue

--

MAPPING

Prescribed Burning plan must be accompanied by 1:10560 OS Maps or DAFF Orthophoto showing the planned location of the fire, the location of prescribed burning blocks and showing the order in which these blocks will be treated. Critical areas such as safety hazards and fire free areas must be clearly marked on the map. Highlight any areas that may pose a risk to fire control such as steep slopes, highly flammable vegetation such as bracken or gorse, or areas particularly exposed to wind.

Indicate location of dwellings, ownership boundaries, suitable assembly points and where available, suitable water reservoirs for fire-fighting vehicles. Show clearly all roads and access tracks and mark whether they are suitable to be traversed by Fire tenders or smaller vehicles, 4x4 or ATV's.

**ONLY BURN WHEN PREPARATIONS ARE COMPLETE AND CONDITIONS ARE SAFE TO BURN
IF IN DOUBT, DO NOT BURN**

APPENDIX 4 Frequently Asked Questions

Q: *When can I burn growing vegetation?*

A: Under **Section 40 of the Wildlife Act 1976**, as amended by the **Wildlife (Amendment) Act, 2000**, landowners are **prohibited** from burning growing vegetation on land not yet cultivated, between **1st March and 31st August** of any given year.

Q: *What is the safe distance to burn near woodland?*

A: Safe distance is dependent on the level of fire protection in place such as firebreaks and the burning conditions prevailing at the time of burning. Under **Section 39 of the Wildlife Act 1976 (as amended)**, it is prohibited to burn vegetation growing within **one mile** of a wood which you do not own, without giving written notice at least 7 days in advance to your local Garda Station, and the forest owner, who has the right to object by counter-notice.

Q: *What are the penalties for illegal burning?*

A: Under **Section 74 of the Wildlife Act 1976** as amended by the **Wildlife (Amendment) Act, 2000** fines for breaches of the Act range from **£500 (€635) to £50,000 (€63,490)** and prison terms from **3 months to 2 years** or both a fine and a prison term.

Any person engaged in illegal burning may also be held responsible for any injury or damage caused by the fire, and the local Fire and Rescue Service may issue a call out charge for costs associated with illegal fires.

Q: *Are there implications for burning agricultural land in regard to the Department's Support Payments for Farmers and cross-compliance?*

A: Under the **Good Agricultural and Environmental Conditions (GAEC)** associated with cross-compliance, the burning of growing vegetation on cultivated or non-cultivated land (including permanent pasture), without approval, is prohibited and could lead to penalties under these schemes (e.g. Single Payment, Disadvantaged Areas).

More information on current legislation can be obtained at www.oireachtas.ie

APPENDIX 5 Do's and Dont's

DO:	DO <u>NOT</u> :
OBEY THE LAW	Do not burn growing vegetation on land not yet cultivated between 1 st March and 31 st August in any year.
WATCH THE WEATHER	Do not burn if the weather is unsuitable for controlled burning. Obtain weather forecasts as close to the time of burning as possible.
Avoid backburning, or only use with extreme caution, due to the risk of irreversible damage to the vegetation and underlying peat. Soil and litter layers should be wet to touch before burning.	Do not burn when the moss and plant litter on the ground surface has completely dried out.
Burn in <u>light</u> wind conditions.	Do not burn if the wind is too strong for the fuel types involved.
Keep fires small and controllable.	Do not burn if the flames are likely to be longer than 3 metres, or about 10 feet. Do not allow the width of the burn to exceed 50 metres (about 54 yards).
Make sure that the equipment for extinguishing the fire is on hand before the burning begins.	Do not burn unless you know how and where the fire will be extinguished. Do not burn uphill on steep slopes.
Prior to planning a prescribed burning operation, ensure you have adequate insurance cover.	Do not burn without insurance, you may be liable personally for any losses incurred.
On the day of the burn, inform adjoining landowners, forest owners and the Regional Fire Control Centre of your plans for the day. At the end of the burn, let them know when all fires have been extinguished.	Do not burn within one mile of a forest you do not own, without giving written notice at least 7 days in advance to your local Garda Station and the forest owner, <u>who has the right to object by counter-notice.</u>
Ensure that workers are supervised, understand the burn plan and emergency procedures and have access to clean drinking water so that they do not suffer from heat exhaustion.	Do not leave the site without ensuring that all operatives are accounted for.
Avoid burning sensitive areas or other areas that may lead to loss of control and fire escape.	Do not burn in the following areas: hedgerows, woodland, National Monuments, thin eroding soils, summits and ridges.