Contents

Integrated Wildfire Management Plan

1. Introduction

Wildfires threaten man-made assets like houses, windfarms, fences and other built infrastructure and they also threaten natural assets like forests, peatlands and immobile species. The financial cost of wildfires can be high. Estimates for the cost of the Saddleworth Moor wildfire in 2018 run into many millions of pounds for firefighting and environmental damage. Public concern around the wildfire issue has risen in recent years.

The climate in the Cairngorms National Park has already changed. These changes are spatially and temporally variable, with the winter months becoming both wetter and warmer, whilst summer months have become warmer with variable consequences for the amount of water available to go into soils and aquatic systems.

Future projections indicate that the Park will experience further warming over the coming decades, resulting in an increasing number of dry days and number of consecutive dry days, during summer months. Large sections of the National Park are likely to experience spring and summer seasons when there is a potential decrease in rainfall. This will increase the risk of drier soils and vegetation, with consequences for ecological functions and the risk of wildfire.

National Park Partnership Plan objectives to increase the amount of woodland and natural regeneration; reduce the negative impacts of red deer and other herbivores; and increase species and habitat diversity on moorland will produce many benefits for biodiversity and climate resilience. They will also increase field layer vegetation in some areas for a significant period of time. Large areas of mature woodland and re-wetted areas will likely help create a more fire resilient landscape in the future. However, these habitats will take many years to develop and during the intervening period fuel loads will increase, as will the corresponding need for fire risk mitigation.

Land managers have been managing wildfire risk in the National Park for many years. In light of the increased need for wildfire planning and the demands this may place on land managers, this plan aims to provide recommendations for land managers and

actions for public bodies. These recommendations and actions are designed to increase the ability of land managers to:

- Reduce the risk of wildfires starting
- Prepare for and respond effectively to wildfires that do start; and
- Mitigate impacts of wildfires in the landscape.

The following document sets out the actions and recommendations corresponding to each of the issues addressed. For ease of reference, a summary table providing an overview of these items is included below.

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Identify methods for mitigating the risk of ignition and the impact of wildfire in the event of one starting.
Identify all assets and features which could be at risk, and which are prioritised for protection.
Map assets and areas of high risk and identify means of protection.
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Recommendation	Significant firefighting assets, including farm machinery capable of transporting large volumes of water, should be registered on the Community Asset Register.	
Action	The Park Authority will work with SFRS to ensure land managers are aware of the Register and how to register assets.	
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Recommendation	Land managers should consider managing vegetation to reduce fuel loads at strategic points in the landscape. All land managers should consider how best to break up fuel loads with natural and man-made firebreaks.	
Recommendation	Land managers should consider maintaining and enhancing natural firebreaks eg mature woodland, wetlands, riparian corridors.	
Recommendation	Consider the provision of water for firefighting eg by re-wetting, creating fire ponds or maintaining access to natural water bodies.	
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Firebreaks		**33**
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2. Reducing the risk of wildfires starting

In Scotland virtually all significant wildfires are started by human action, mostly accidental but sometimes deliberate. The most important task in mitigating the risk of wildfires is to reduce the chances of one starting in the first place. Wildfire prevention involves land managers assessing where on their land there is most interaction between people and flammable fuels, it involves ranger services and patrolling, signage and wider public education, and may involve a fire byelaw and the provision of safe facilities for campfires and barbeques which can be used with landowner permission.

2.1 Wildfire risk assessment on a land holding

Completing a Wildfire Risk Assessment should be seen as the first step in the fire planning process. Every land manager should risk assess their land holding in relation to wildfire. The aim of wildfire risk assessment is twofold:

1. It enables land managers to target measures which reduce the risk of ignition, for example identifying where ranger patrols and signage are most needed; and
2. It enables land managers to spatially target measures which may enable a wildfire to be contained, for example firebreaks.

Wildfire risk assessments identify where people are most likely to start fires, for example at popular camping locations and picnic spots; and where fuel loads are likely to be high, unbroken and continuous. Areas of high risk are likely to occur where people interact most with high fuel loads. Mitigation to reduce risk should then be considered a priority at these points.

Wildfire risk assessments then identify the assets which are at risk. These may be buildings, infrastructure, natural resources or places where people are likely to be. The vulnerability of each asset to wildfire should be assessed and means of protecting them considered.

When conducting a wildfire risk assessment, land managers should consider neighbouring properties, both in terms of fire spreading from a neighbouring property onto their own land and the other way around.

Wildfire risk assessment is not static. Fuel loads may change over time, as may the behaviour of people. Assessments should be adaptive and carried out at least once every three years and not only at periods of high fire risk.

Recommendation: Land managers should proactively risk assess their land holding in relation to wildfire at least every three years or more regularly if circumstances have clearly changed. To do this they should:

- Assess high risk areas, where people are most likely to interact with high fuel loads.
- Identify methods for mitigating the risk of ignition and the impact of wildfire in the event of one starting.
- Identify all assets and features which could be at risk, and which are prioritised for protection.
- Map assets and areas of high risk and identify means of protection.
- Consider the wildfire risk management of neighbours and discuss risk management collectively.

An example wildfire risk assessment template is provided in Annex 1.

2.2 Muirburn

Muirburn which gets out of control can lead to wildfires. Advances in cutting and other forms of equipment which enable firebreaks to be created more easily are thought to have reduced the risk in some parts of the Park, however, incidents do still occur. All muirburn practitioners should comply with all aspects of the Muirburn Licensing system when it becomes operational and all aspects of the Muirburn Code which sets out how to conduct muirburn safely and appropriately. Under the Wildlife Management and Muirburn Act 2024, muirburn practitioners must "have regard" to the Muirburn Code. Non-adherence to the requirements set out in the Code can result in a Muirburn licensing sanction. At time of writing the Muirburn Code has still to be finalised.

Action: All muirburn practitioners to adhere to the requirements set out in the Muirburn Code.

2.3 Managing for visitors and the potential byelaw

The Cairngorms are a popular destination with an estimated 2.149 million in 2023. Greater public access has the benefit that wildfires are likely to be more quickly detected and reported. However, Covid-19 stimulated a marked increase in camping and the lighting of recreational fires. Post lockdown, many visitors were camping for the first

time and had little or no knowledge of the Scottish Outdoor Access Code (SOAC), guidance on camping and the use of campfires. The popularity of camping has continued up to the present day with large numbers of people camping informally and lighting campfires at popular sites such as Loch Morlich, Loch Kinord and the River Clunie near Braemar. This causes community concern, particularly where campfires are being lit close to high fuel loads and to settlements. Large wildfires at Cannich and Daviot in the dry June of 2023 have added to those concerns. Significant efforts have been made by the Park Authority, Police Scotland and other agencies to curb irresponsible behaviour, through education initiatives and direct requests.

The Park Authority launched a consultation on fire management, including the potential introduction of fire byelaws, in February 2024. A consultation document outlined three potential ways forward: a no byelaw option, a byelaw at times of high fire risk, and a year-round byelaw.

The consultation received a total of 1,664 responses which came from Park residents, visitors and land managers. Almost 80% of respondents thought a fire management byelaw was part of the solution to tackle wildfire risk. There was no clear preference on whether there should be a year-round restriction on lighting fires, or a restriction based on wildfire risk. In September 2024 the Park Authority Board decided that a seasonal byelaw, running from 01 April to 30 September each year, would be the most appropriate approach. The proposed byelaw requires approval from Scottish Ministers.

Any byelaw is likely to include exemptions where fires can be lit with landowner permission. This exception might encompass organised groups, for example Scout camps. Depending on the circumstances, dedicated facilities for organised groups offer a much safer and more manageable experience, which reduces the risk of fires being lit elsewhere.

Recommendation: Land managers should consider when and where they might give permission to organised groups for fires to be lit.

2.4 Management of recreational fires

Currently, activity to manage the use of recreational fires in the National Park is undertaken jointly by landowners / managers, the Park Authority and public sector

partners including Police Scotland. Many land managers will do this through site signage, social media and face-to face engagement with visitors, using their own ranger services or other estate staff. The Park Authority ranger service complements this with additional patrols at popular sites where rangers provide advice to visitors and, where necessary, extinguish fires considered to be unsafe. Rangers also undertake patrols where they remove evidence of previous fires to try and reduce 'copycat' behaviour.

To complement this direct engagement activity, the Park Authority also undertakes communications activity around fires both locally and with national partners. This includes pre-arrival activity through the media and popular social media channels, promotion of a leaflet that is used by the Park Authority rangers and partner ranger services, and Scottish Outdoor Access Code compliant signage.

If the byelaw is approved, the ranger service will continue an approach based on friendly engagement with the public and will seek to inform and educate. The byelaw will hopefully deter most people from lighting fires in the first place and will strengthen the ability of rangers to deal with situations where people refuse to put fires out.

Action: If the byelaw is approved then the Park Authority must ensure there is adequate resource, including training, to make its use effective.

2.5 Wildfire danger rating assessment

For much of the year there is little risk of wildfire under current climatic conditions. Fuels are damp and plants contain sufficient moisture to make them fire resistant. However, when fuels dry out, Wildfire Danger Rating Assessments are made by the Scottish Wildfire Forum and periods of Very High Risk or Extreme Risk are communicated to a wide range of stakeholders including the land management community via email. The Scottish Wildfire Forum is led by Scottish Fire and Rescue Service (SFRS) who communicate Very High and Extreme Risk to the public through social media. This messaging is amplified by a range of agencies and individuals. Land managers will simultaneously be making their own informal assessments of fire risk as they observe weather and fuel conditions on their own land.

The current Wildfire Danger Rating Assessment system works well and is well received by land managers and agencies. It is based on good science and warnings are

effectively and rapidly communicated. However, the system is not robust as it is built around one key individual. A project plan is now being devised through the Scottish Wildfire Forum to build a more robust system with greater human capacity. Crucially, knowledge of how to use and interpret European Forest Fire Information System (EFFIS) data should be spread among more individuals.

The Scottish Wildfire Forum plays an important role in disseminating the Wildfire Danger Rating Assessments to land managers and other professionals associated with managing wildfire risk. There is also a need for clear messaging to members of the public. Clarity of lines of communications is crucial in any new system.

Action: The Scottish Wildfire Forum to develop a more robust system for developing Wildfire Danger Rating Assessments by spring 2026.

2.6 Community communications groups for wildfire information

The Royal Society for the Protection of Birds (RSPB) have set up a WhatsApp group for the community around Nethy Bridge and Abernethy. This is used exclusively for transmitting fire related information and content is overseen by the administrator accordingly. People message if they see smoke or someone setting up a barbeque in a vulnerable area. Rangers and other estate staff can then respond rapidly if required. Such a group could be used to organise resources at a wildfire and to ensure only the appropriate amount of resource is deployed on site. This communications group is a useful initiative with the potential for a wider network of such groups. Should land managers and communities be interested in setting up similar groups, the Park Authority will facilitate and support their establishment.

Action: The Park Authority to identify communities where there is interest in setting up fire communication groups and then to facilitate and support their establishment.

2.7 Signage and other communications material

There are significant complexities in communicating with the public around the dangers of wildfires. The following elements should be considered when creating signage and other communications materials:

- A significant proportion (27%) of visitors to the National Park come from overseas and a majority of those will not speak English as a first language. The need for both simplicity and consistency of message will, therefore, be paramount.
- There are over 150 different landholdings in the National Park, ranging in size from under 100 hectares to over 40,000 hectares. Whilst the Park Authority will be coordinating work in this area, it does not own any land within the National Park. A common approach or framework for wildfire signage – and wider messaging – will be required that balances individual partner brand requirements with the need for absolute clarity.
- The audience for this material is extremely varied, from long-distance visitors to local residents and workers, making it very difficult to predict the 'order' in which information is processed. Visitors also use a wide range of tools to inform their visit, from third-party websites and social media to on-site signage and ranger / staff interactions. Rather than treating these different communications channels in isolation, they should all be considered as part of a single workstream.
- Given that the proposed 'no fires' period coincides with the busiest parts of the visitor season, any signage / communications requirements will need to be simple to rollout and easy to implement for partners on the ground. Similarly, there needs to be a simple and consistent means of notifying partners of any changes as they arise, to avoid mixed messaging in different parts of the National Park.
- All signage and comms materials will need to sit alongside existing SOAC guidance, Wildfire Danger Rating Assessments, etc. and avoid mixed messaging.

In developing signage and other material for wildfires and potential fire byelaws, the Park Authority therefore proposes a three-stage process, informed by close collaboration with partner estates, Non-Governmental Organisations (NGOs) and other public bodies.

First, partners across the National Park and across related agencies (eg VisitScotland and NatureScot) will identify a longlist of key locations and / or channels to deliver wildfire messaging to target audiences.

Second, a simple communications framework for wildfires, underpinned by best-available evidence on influencing visitor / audience behaviour will be developed. This framework will not be designed for any one channel or platform but instead will be adaptable to everything from a face-to-face conversation to a roadside sign.

The final stage will involve the creation of channel-specific materials based on the above framework, including but not limited to:

- Roadside signage
- Partner signage (incorporating partner branding)
- Scripted elements to guide face-to-face conversations
- Video materials
- Social media and other digital advertising assets
- Media lines and key messages
- Face-to-face event materials.

Working with existing forums and partnerships, including the Cairngorms Managing for Visitors Group and the National Visitor Management Coordination Group, newly established community communications groups, land managers, other businesses and organisations with a role in communicating with visitors, will help ensure the effective coordination of information and a dynamic, adaptive approach.

Action: Park Authority and partners to develop and manage a simple, coordinated messaging framework, which can be easily adapted for use on-line and other forms of media.

Action: Park Authority and partners to provide ranger support, signage and communications to reinforce responsible behaviour messaging and the implementation of a byelaw.

3. Improving the effectiveness of firefighting when a wildfire occurs

Establishing a standardised, high level of preparedness on all landholdings is key to responding effectively to a wildfire, with fire plans for individual land holdings being an important element. Preparedness also involves having appropriate equipment, training for staff who might respond to a wildfire and models of collaboration and communication between those who attend a wildfire. The role of an estate office can be crucial in a wildfire and this role has a training requirement. The use of helicopters, including the authority to request helicopter assistance and adequate insurance to pay for helicopter costs, are all important issues to consider.

3.1 Estate fire plans

Wildfires are high pressure events which test planning systems and decision makers. There are multiple variables involved, including location, terrain, wind, weather and fuel load. Wildfires may develop quite rapidly and there is limited time to refer to a prescriptive plan. When fighting a growing wildfire, trained, experienced individuals are required, who are able to make decisions about what resources are required and how those resources should be deployed.

Whilst detailed written plans are unlikely to be used when dealing with the incident, the planning process is critical. As the basis for all fire management planning in the National Park, it is strongly recommended each landholding has, at least, a basic Fire Plan which includes the following:

- Basic property information: the owner, their contact details and the contact details of key personnel.
- Information on neighbouring properties and their contact details.
- A map showing property boundaries, rendezvous points, access roads, locked gates, bridge ratings, fire ponds or water supply points. This map should be on a standard Ordnance Survey (OS) background at a scale of 1:25000 or 1:50000 so is understandable to all.
- Grid references (or What3words) for the locations of rendezvous points with sufficient parking.
- Instructions on who to call out if assistance is required. On large estates this will start with the estate's own internal resources but should also include neighbours, members of a Fire Group if applicable and Scottish Fire and Rescue Service control room. Call out lists and contact details should be updated annually.
- A list of relevant equipment held by the estate, its servicing requirements and checklist of when last serviced.
- Instructions on who has authority to call for helicopter assistance if required.

Contact details and other information in the Fire Plan will change. Each Fire Plan must be updated annually or when information changes. Review dates should be noted on Fire Plans. Fire Plans should be shared with SFRS.

Recommendation: Every landholding should prepare a basic Fire Plan, as described above, which is maintained and reviewed annually and shared with SFRS. An example fire plan is in Annex 2.

Scottish Forestry will ask applicants to produce Fire Plans with most Forest Grant Scheme Applications. Where relevant, the Park Authority will ask applicants to the Climate Adaptation Fund to have a Fire Plan.

Action: The Park Authority will support SFRS in maintaining a register of estates and landholdings with Fire Plans.

3.2 Personal Protective Equipment

Personal Protective Equipment (PPE) is essential for those fighting a wildfire. The specific PPE requirements may vary depending on the tasks being performed, but anyone involved in fighting flames should wear the following PPE:

- Fire resistant clothing which does not ignite or melt when exposed to flames. This often takes the form of a fire-resistant boiler suit and is best in bright colours to maximise the chance of being seen by others in smoke or poor visibility.
- A face shield which protects the face from radiant heat, and which protects the eyes from ash and dust. This may take the form of a Perspex shield. Face shields can leave ears and neck exposed to radiant heat and firefighters should consider how best to cover those when close to flames.
- Fire resistant gloves which protect hands from radiant heat and from direct contact with hot surfaces such as the metal handle of a fire broom or scrubber.
- Boots that will resist heat while permitting safe walking in rough terrain. Firefighting may involve close proximity to vehicles and All-Terrain Vehicles (ATV) and consideration should be given to protective toe caps to reduce the risk of injury. However, steel toe caps can heat up when close to flames and there is a balance of risk to be made here.
- Wildfires generate a lot of smoke and fine particulate matter. It can be difficult to avoid some smoke inhalation when fighting a wildfire. It is highly unlikely that estates will equip staff with respiratory gear as this is expensive and requires specialist training. However, those fighting wildfires may feel more comfortable if they wear masks over their mouths and nose.

There are different roles for people at a wildfire, and many will not be exposed to heat, smoke or flames. However, wildfire is unpredictable and unexpected flare ups may occur. In general people attending a wildfire should wear clothes which are visible, and which do not easily ignite or melt. Natural fibres like wool are reasonably fire resistant

and provide moderate protection against heat and flames. Leather garments can also give good protection.

Recommendation: Individuals who might have to tackle a wildfire should be equipped with adequate PPE. Larger landholdings should consider having a stock of PPE available for more general use.

3.3 Equipment for fighting a fire

All significant landholdings in the Cairngorms National Park should have some basic equipment with which to fight fires. At the least, each estate should carry a stock of fire beaters or scrubbers which can be used to tackle relatively low flame heights. Leaf blowers have become a relatively recent innovation in firefighting and can be highly effective in many conditions. As these are multi-purpose machines, they may be a good value option for estates wishing to build a stock of fire-fighting equipment.
Fires in very dry conditions can be extremely difficult to put out by beating, scrubbing or by leaf blowers and these require the application of water or another wetting agent. Hand operated fire fighting backpacks can enable relatively small volumes of water to be brought to a site quickly and can help tackle small fires or re-ignitions.
Large wildfires need to be fought with large volumes of water. One of the key tasks of a manager when tackling a large wildfire is to ensure that a steady supply of water can be applied to the fire via ATV mounted fire fogging units. Fire fogging units are extremely effective in fighting fires with flame lengths of up to three meters. Fire fogging units need to be continuously replenished so the development of a chain of water where fire fogging units can be filled either from natural water supplies, from fire ponds or from bowsers is a key task in firefighting. In the absence of suitable water bodies, land holdings with access to farm machinery should consider what equipment might be used to transport large volumes of water to the vicinity of a fire so fire fogging units can be continuously replenished. There are a range of fire fogging units on the market, and these can be carried by a range of ATVs.

Recommendation: Equipment and machinery requirements will vary according to landholding's needs. It is recommended that:

- All landholdings should carry a stock of fire beaters, scrubbers or leaf blowers appropriate to their needs.
- All landholdings should consider whether carrying a stock of fire fighting backpacks would be appropriate.

- Land holdings over 1000ha should have ready access to a machine-mounted fire fogging unit.
- All relevant estate staff should be familiar with the use of equipment above.

Recommendation: Significant firefighting assets, including farm machinery capable of transporting large volumes of water, should be registered on the Community Asset Register.

Action: The Park Authority will work with SFRS to ensure land managers are aware of the Register and how to register assets.

Recommendation: Minimise distances that firefighters need to travel to replenish water supplies in a fire fogging unit and consider how to ensure fire fogging units can access all or most parts of a landholding.

3.4 Training

Fighting a wildfire involves a degree of risk from flames, smoke, strenuous exercise, trips and falls etc. All personnel who are likely to be involved in fighting a wildfire should be adequately trained to do so. SFRS will not allow untrained personnel to help at a wildfire in any firefighting role.

Wildfires themselves are obviously not training environments so attendance on a recognised Muirburn training course is strongly recommended. Training will be a requirement for those wishing to apply for a Muirburn Licence. The Muirburn Practitioner Foundation Course is a LANTRA approved course and is recognised by NatureScot and the Scottish Fire and Rescue Service. Other courses may also be available. Currently this training is delivered by Bright Sparks Burning Techniques Ltd, but other training providers may come into the market over time. Participants must first complete a free e-learning package which covers the Muirburn Code. A second practical module includes training on:

- Identifying the correct PPE.
- The safe use of hand tools.
- The safe use of mechanical equipment.
- Weather considerations including Wildfire Danger Rating Assessments.
- Identification and creation of fire breaks.
- Safely applying fire.

- Safely extinguishing fire, including post burn monitoring.
- Communications.
- Team safety and wellbeing

Recommendation: Employers ensure their staff who may be involved in firefighting are adequately trained and certificated. Staff should be aware of the Fire Plan and trained for their role in implementing it.

There are many roles at a wildfire which do not involve fighting flames and where training may not be required. People may be required to provide directions, organise traffic or to ensure firefighters have drinking water and food.

Many estate staff are well practised and equipped to fight wildfires. This is particularly the case on estates where muirburn is regularly practiced. People who regularly conduct muirburn understand fire behaviour and are practiced in firefighting techniques. They understand the equipment which is necessary to fight a fire, and this equipment is maintained and used regularly. It is vital these skills are retained in the National Park, and there is continued investment in equipment.

Estates which do not routinely conduct muirburn should consider alternative approaches to ensuring staff are trained to fight wildfires, for example:

- Loaning out staff to help others conduct muirburn.
- The burning of firebreaks, to break up continuous high fuel loads and to protect key assets, builds firefighting familiarity and skills.
- Regular fire drills and firefighting equipment practice.

Some estates have noted a decline in staff skills with regard to firefighting following decisions to use muirburn less. Wildfires occur irregularly and there may be several years between callouts. Unless training is maintained, staff can easily become unfamiliar with firefighting equipment, and maintenance of equipment may decline leading to failures when needed. Staff will also become progressively less familiar with fire behaviour and firefighting techniques.

Recommendation: Estates which do not conduct muirburn regularly should develop alternative approaches to staff training and familiarisation with firefighting.

3.5 The role of the Scottish Fire and Rescue Service at a wildfire

When in attendance, the SFRS is in overall command of the incident and will initiate their Incident Command System (ICS). This is likely to include a representative of the landowner as the Wildfire Incident Liaison Officer (WILO) (this name is currently under review by SFRS and may change). The WILO will act as the conduit for communications between SFRS and the Land Manager.

Land managers will retain their own lines of communication at all times, especially to ensure the health and safety of their own staff. However, this must be in conjunction with requirements from SFRS.

An Incident Tactical Plan should be developed as soon as possible by the Fire Service Incident Commander. This should be developed with input from the WILO.

Any requests for support from SFRS to the land manager should be via the WILO. WILO tasks might include (not exhaustive):

- Identify themselves to SFRS:
  a) Report any missing Personnel.
  b) Report risks or hazards associated with the land.
  c) Report any personnel already deployed including where they are, what they are doing, equipment in use.
  d) Identify access points and routes.
  e) Describe infrastructure (turning points / roadways / water supplies / weak bridges / boundaries / etc.
  f) Report available resources (equipment / vehicles / personnel)
- Attend multi-agency meetings.
- Liaise with other non-SFRS responders.
- Agree handover of responsibility from SFRS to the landowner at an appropriate time.

Recommendation: Personnel who are likely to assume the role of WILO should be familiar with that role and regularly consider how they might put it into practice.

3.6 Communications at a wildfire

An effective communication system at a wildfire is essential to ensure safety and effective use of resources. Communication may be between SFRS and estate staff or

between estate teams. There is also usually a need for good communication between firefighters and a location at a safe distance from the fire, for example an estate office.

Communications at a wildfire can be fast paced and may involve numerous people. Communications are therefore much better transmitted via handheld radios than mobile phones. Large estates are likely to have a radio system which allows all staff to speak to each other. However, there is also a need for a common radio frequency across groups of estates. Most Deer Management Groups will already share a common frequency for tasks like deer counting.

There is no need for one common radio frequency for all landholdings across the National Park as this would potentially involve too much radio traffic. Where fires occur near the boundary between two different common radio frequencies, then one person should communicate instructions from the Incident Commander through two different radios which are set to the two common frequencies. There can be a lot of radio traffic at a wildfire and radio discipline is vital for effective communication. Only important messages should be transmitted, and these should be kept concise. There is a real need to minimise radio chat during firefighting operations.

Recommendation: All estates should be part of a common radio network with their neighbours.

3.7 The role of an estate office in a wildfire

An estate office can be a vital hub for communications during a wildfire. Common roles include:

- **Communication and Coordination:** The estate office will likely hold contact information for neighbouring landholdings and those that can be called out to assist fighting a wildfire. The estate office may serve as a central point of communication and coordination between neighbours, SFRS, residents, emergency services, and other relevant authorities. The estate office can also communicate with those who may be concerned about a fire and may disseminate information eg to estate residents.
- **Logging in fire fighters and their equipment:** Keeping a record of which individuals are fighting the fire, what equipment is on site and which individuals are involved in subsidiary roles. The estate office can also keep a record of people leaving the site so that the precise number of people involved in fighting the fire at any one time is known. This role provides an important health and safety function.

- **Emergency Planning:** The estate office may have established emergency response plans in place for wildfires, including advice for local residents who may be affected by smoke or may feel their property is at direct risk from the fire. They may also have established protocols for coordinating with emergency services.

Recommendation: Estate offices should practice their approach to wildfire response annually. This should take the form of an annual drill where estate office staff practice procedures around calling out neighbours, logging firefighters in and out and liaising with estate residents.

3.8 Landholdings with no resident staff

Some landholdings in the Cairngorms now have no resident staff. This means there may be less chance of anyone preventing or detecting ignitions and there may be no one to respond immediately to a wildfire. This situation is a key concern for neighbouring landholdings. Landholdings with no staff are likely to be represented by agents. Such agents should be included in all collaborative wildfire groupings. Agents should ensure permission is granted for neighbouring estates to take whatever action is required to control wildfires until SFRS assume control of an incident.

Recommendation: All land holdings with no resident staff should give permission for neighbours to access their land in the event of a wildfire. Neighbours should be authorised to take whatever action is required to effectively tackle a wildfire.

3.9 Fire Groups and other Collaborative Mechanisms

The role of a Fire Group is essentially to ensure a prompt and effective response to a wildfire. When a wildfire is detected on a landholding the incident is likely to be reported either to the landholding itself or to SFRS. SFRS may attend without delay, or the landholding may assess whether it can put out a fire using their own resources or whether assistance is required.

A Fire Group should maintain contact lists which enable rapid calls for assistance. Such lists may be of particular importance to SFRS who may not have the same level of local knowledge as estates. However, rapid communication is relatively easy to achieve, and landholdings will have many reasons to be in regular contact with their neighbours. There is also an existing strong culture of providing mutual assistance between landholdings in the National Park.

The South Grampian Fire Group (SGFG) is the only fire group currently active in the National Park. The SGFG meets annually and brings together land managers and SFRS to discuss any incidents which have occurred within their area and plan future collaboration. SGFG have formal mutual assistance agreements between estates which may involve agreements to claim expenses from each other from insurance claims. Claims might include the cost of estate staff-time when fighting a fire on a neighbouring property. SGFG also maintain contact lists and lists of firefighting equipment held by each member. Each member including SFRS has copies of all lists.
Fire Groups across the National Park have struggled to maintain interest in the past and often rely on the energy and commitment of a few individuals. There may be no wildfires for years in any one locality and this leads to an inevitable loss of interest. Formal Fire Groups are not considered essential across the Park but it is recommended that wildfire preparedness is discussed annually with neighbouring land managers. Where there is demand, the Park Authority will support Fire Groups, as and when required. Where there is no fire group, existing collaborative mechanisms, for example Deer Management Groups (DMGs) and landscape partnerships, could be used as an alternative.

All landholdings should know who they can call on for prompt assistance and have a means of rapid contact with those who might assist. The importance of mutual aid should be emphasised across both informal and formal land management networks, for example DMGs. Mutual aid agreements should be based on geography and not around a common land management objective. All land managers should agree to help their neighbours and collaborate to fight wildfires.

Recommendation: Estates should either be part of a formal Fire Group or some alternative collaborative grouping to discuss wildfire preparedness.

3.10 Collaboration and mutual aid

The long-established culture of providing mutual firefighting aid to neighbours is threatened by the current polarisation across land management issues. Some who see muirburn as crucial to their land management have expressed reluctance to fight fires on land that is managed in a manner which increases fuel loads. Currently many estates provide SFRS with manpower and equipment when wildfires occur even when a long way from their own land. Reluctance has recently been expressed about continuing to offer this service.

Fighting high intensity fires in high fuel loads does carry risks and the health and safety of fire fighters should be paramount at all times. The Park Authority strongly urges all

land managers to treat wildfire as a common enemy and to collaborate to fight fires whenever it is safe to do so, regardless of debates over land management objectives or practice.

Action: The Park Authority will foster collaboration on preventing and fighting wildfire.

3.11 Helicopters and insurance

The Integrated Wildfire Management Plan emphases the importance of a good wildfire response on the ground. There is a risk that helicopters are seen as a panacea for wildfires, and this is often a misconception. Helicopters can be extremely useful at a wildfire for visual assessments of fire scale and direction of travel, for transporting firefighters and equipment and for direct water bombing. However, reliance on helicopters brings risks. There are a very limited number of suitable helicopters based in Scotland. There is a high likelihood they will be carrying out other tasks and helicopter availability is often an issue. At periods of high fire risk across large parts of Scotland they may be fighting other fires.

Water bombing relies on a water supply which ideally is two meters deep and at least 20 meters in diameter or longest length. The availability of such water supplies may be limited or may only occur at a distance from the fire. A lengthy return time between a water supply and the wildfire location may make water bombing impractical or ineffective. Effective water bombing also relies on pilot skill and experience in this task. The effectiveness of water bombing can be very variable as a result.

However, there are circumstances where helicopters can be very useful at a wildfire and landowners often carry insurance to cover helicopter costs. Helicopter use is extremely expensive so land managers must be clear their insurance policy will cover their costs in all circumstances. Some landowners have had difficulty in insuring native woodland as there may be no clear commercial value and therefore no clear insurance valuation. Others are confident their insurance policies will cover all costs and have received insurance payments when tested.

Recommendation: All landholdings should develop a clear policy as to who can call out a helicopter and when. Relevant staff must be clear as regards the circumstances when they are permitted to call for helicopter assistance.

Recommendation: All landholdings should consider having insurance to cover the cost of helicopter assistance at a wildfire. If a landholding has an insurance policy, it must be clear as to exactly what is covered.

4. Building Wildfire Resilience in a Changing Landscape

Scottish Government policy expressed through the Scottish Biodiversity Strategy, woodland expansion targets, developing deer legislation and the Cairngorms National Park Partnership Plan all indicate a direction of travel towards increased woodland and lower grazing levels to safeguard biodiversity and to sequester carbon. This chimes with the aspirations of many landowners in the National Park who are enacting these policies across significant areas. While ecological restoration will produce many benefits and ultimately move landscapes towards greater resilience, it will also increase fuel loads in the medium term, leading to the risk of more intense wildfires in dry conditions.

Information in this section is intended to provide guidance to land managers in initiating a process of identifying and prioritising assets of all kinds; and subsequently mapping out the most appropriate protective measures at both an estate level and collectively at the landscape-scale, for example through Deer Management Groups and landscape partnerships.

4.1 Wildfire resilience

This Plan encourages land managers to consider how they might increase wildfire resilience in this changing landscape. While more fuel increases the intensity of any fire that starts, the risk of wildfires is currently relatively low in Scotland and higher fuel loads do not increase the risk of ignition. Many areas have had high fuel loads for decades without burning. However, any fires that do start in dry conditions are likely to have high consequence. This Plan seeks to encourage an appropriate balance between low risk and high consequence. It recognises there will be a range of views on where that point of balance lies.

In the context of this plan, wildfire resilience is the ability of a landscape to withstand wildfire events, so that the spatial scale and impact of any wildfire is minimised. Resilience is about people as well as landscape. The Cairngorms has a fantastic resource in terms of skilled people working on the land with appropriate equipment who

can fight fires. Those skills must be retained across the whole National Park and the spectrum of land management objectives within it. Resilience through people has been discussed in Section 3 of this Plan. This section concentrates on building resilience in the landscape itself.
Wildfires where fuel loads are high can easily be beyond the capacity of fire-fighters to control effectively. Breaking up areas of continuous, highly flammable vegetation will help firefighters tackle wildfires. Different opportunities will present themselves to land managers in the context of their land management objectives. At both an individual estate level and across wider groups of landholdings, land managers should consider where there are opportunities to manage vegetation by cutting, mowing, grazing, prescribed burning, re-wetting and vegetation diversification to create different types of firebreaks and vegetation mosaics in strategic locations in the landscape.

Land management objectives will continue to change across the National Park, as will the habitat mosaics and fuel loads. Considering building resilience into the changing landscapes will require frequent re-assessment and an adaptive approach. Monitoring and review of the Integrated Wildfire Management Plan will support this process.

4.2 Variation in fuel loads across the Cairngorms National Park

This Plan looks at the propensity of the current landscape to burn and considers how that might change. It encourages land managers to consider ways of mitigating the increased risk of more intense wildfires in that changing landscape.

Fuel loads are rarely static and will change over time and vary at a range of spatial scales from a patch of gorse to the landscape scale. Each land holding will have some variation in fuel load, but it is possible to describe in general terms the variation in fuel loads on a landscape scale within the National Park (see Figure 1).

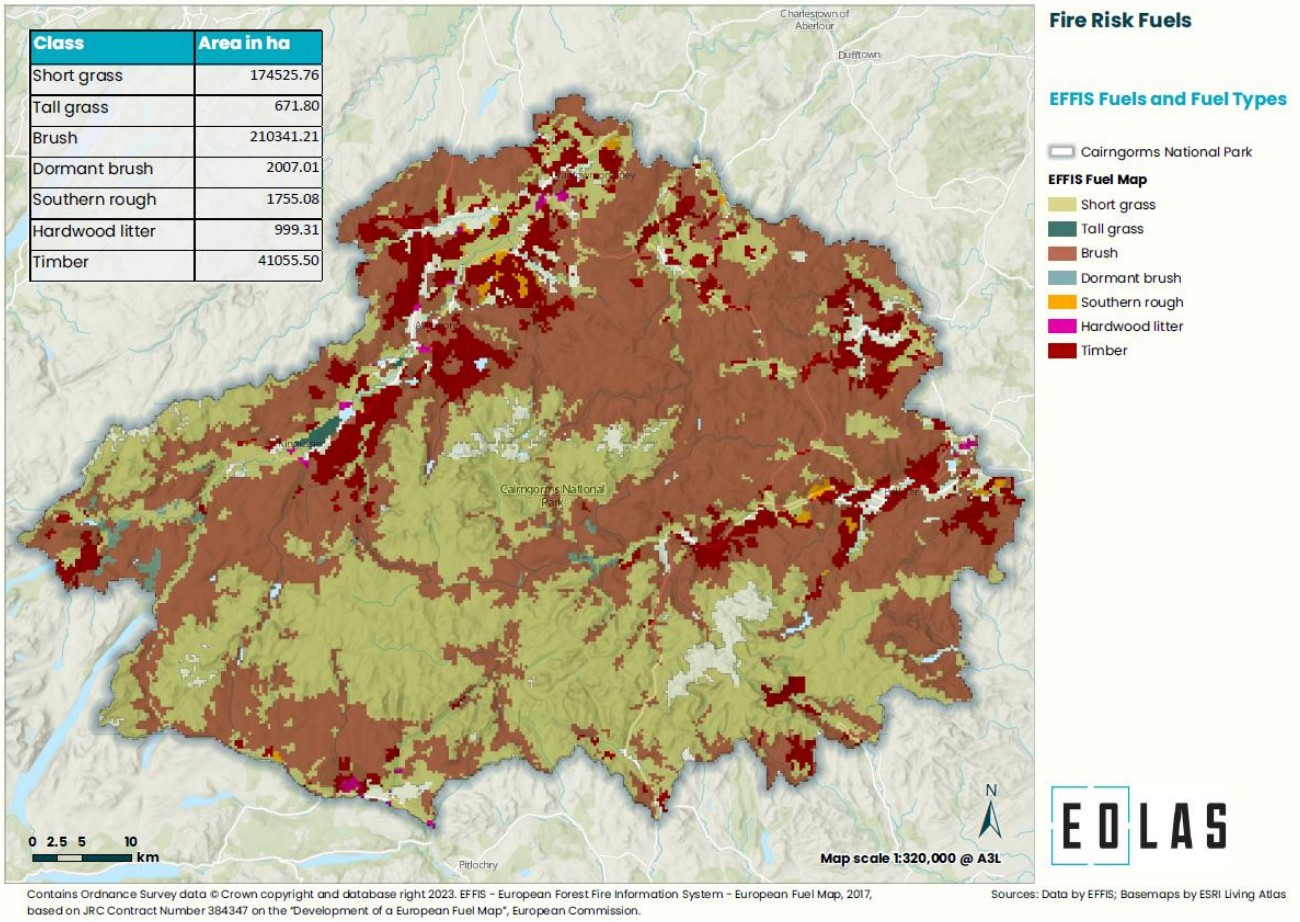


Figure 1. Fire Risk Fuels map for Cairngorms National Park, created by European Forest Fire Information Service (EFFIS). In the Scottish context, 'Brush' is heather dominated moorland; 'Southern rough' is forestry clear fell.

Hills in the southeast of the National Park often have short grass swards eg parts of Glens Shee, Isla and Clova. Stands of heather may grow as islands within a wider grassy area. Short grass is largely fire resistant as there is little fuel to burn. Areas of continuous high fuel loads are currently rare in the southeast of the National Park and the chances of large, intense wildfires are relatively low. This may begin to change with reductions in muirburn and grazing in some areas.

Further north in Deeside there is more heather which burns easily when dry and there are large areas of continuous fuel. There is a significant proportion of woodland which is often pine or birch dominated with a heather, blaeberry or grass field layer. On most landholdings, fuel loads are reduced by muirburn and grazing but there are also some pockets with high fuel loads. Other estates have lower grazing levels and may not carry out muirburn so have quite large areas of continuous, relatively high fuel load. There are

many young plantations and areas of natural tree regeneration where fuel loads can be very high, and which can burn intensely. Wildfires do occasionally occur in Deeside and have the potential to spread quickly and burn intensely across large areas. The mature pine and birch woodlands may be more fire resistant, as discussed later.

The hills within Strathdon, around Glen Avon and Glen Brown and the hills to the north around Glen Livet and Glen Lochy tend to be heather dominated, with many relatively small pine and spruce plantations in the landscape. Fuel loads have been reduced by muirburn and grazing, which will reduce the intensity of any wildfires that may start. More recently, cutting has been introduced to break up heather stands in some areas. Plantations are often currently quite dense with little field layer and low fuel levels at ground level.

In Strathspey, reductions in muirburn and grazing over the last 20-30 years have resulted in tree regeneration and woodland expansion. Woodlands in Strathspey are dominated by pine which is often regenerating and accompanied by significant growth of heather. Fuel loads are therefore often relatively high and fuels relatively unbroken. Land managers put significant efforts into fire prevention but any wildfires that do start have the potential to spread rapidly and burn intensely.

West of the A9, the east and south-east facing slopes of the Monadhliaths tend to be heather dominated with some areas of high fuel load. There are plantations and areas of native woodland all along the A9. High intensity wildfires are possible in this area although the pattern of landownership has led to the creation of many hill tracks which run uphill and create some narrow firebreaks against the prevailing wind direction.

The hills south of Drumochter and south and east to Glen Shee are subject to muirburn less frequently than much of the land in Deeside and Donside. However, fuel loads are often kept relatively low by grazing. Hills in this area are covered by a mix of heather and grass and many areas are relatively fire resilient e.g. the lower slopes of Glen Tilt, the east side of Glenfernate and the south side of Dalmunzie, where large numbers of sheep have been grazed.

Throughout the National Park, much of the lower lying glen bottoms and straths are farmed. Improved agricultural land is generally a fire-resistant landscape. Grass fields make good barriers to wildfires when grass is green or when livestock graze swards low to the ground. Under most current conditions the improved in-bye land within the

National Park will act as a barrier to fire, although unimproved rough grazing can still burn.

4.3 Future trends in fuel loads and timescales to increase resilience

Grazing and muirburn remain widespread land management activities across the Cairngorms and many landowners still value these activities at least partly because fuel loads are kept low. Muirburn is primarily carried out to provide a habitat mosaic for grouse, but it does also break up and reduce fuel loads across large areas. Throughout many areas of the National Park, there is now a trend towards reduced numbers of deer and sheep and the Wildlife Management and Muirburn Act 2024 could reduce the total amount of muirburn. Reductions in grazing and muirburn will likely cause fuel loads to increase over time.

Public policy is to create more mature woodland and a wetter landscape through woodland expansion, forest bog and peatland restoration. With the caveat that if it is hot and dry enough then all vegetation will burn, mature Caledonian pinewood and mature birch woodland with a grassy field layer can be relatively fire resilient under current Scottish conditions. Within woodlands, the environment tends to be damper and there is less wind to drive fires. Wildfires in Scotland are more likely to burn across the field layer on the forest floor, rather than burn through the canopy in a crown fire. The field layer within mature Caledonian pinewood in the Cairngorms may be blaeberry dominated. The tussocks which often form in a blaeberry field layer can break up the face of a fire, making it much easier to extinguish. Within mature birchwood, grassy field layers often form, and these can be fire resilient when the grass is short or when green and growing. Large areas of mature woodland will likely help create a relatively wildfire resilient landscape in the future.

However new woodlands take a long time to develop, and that development is often accompanied by significant growth of heather and other plants in the field layer. Long dense heather is a feature of regenerating pinewoods in the Cairngorms. The development of many pinewoods in Strathspey and Deeside demonstrate that increased fuel loads are likely to persist for 50-100 years before they begin to be suppressed by woodland cover. During this critical period, it is necessary to consider how to break up fuel loads, to reduce the risk of high intensity wildfire spreading across significant areas.

Crown fires, where the canopy of a forest burns, are currently rare in mature trees in Scotland, but have occurred in some Cairngorms forests in the past. They have occurred

more frequently in young plantations, where tree's branch to ground level and they are more likely to occur in conifers than broad leaves. Crown fires can move rapidly where the canopy is dense and produce many flying embers which can jump barriers. They produce intense heat which itself aids fire spread. The usual techniques used to fight fires in the field layer are ineffective and unsafe to use in combating a crown fire. Fire fighting from the air is often the only feasible approach, but this option is limited in the UK due to a lack of suitable aircraft and skilled pilots.

The risk of crown fires is reduced when plantations are thinned. Semi-natural forests often have trees at relatively low density which limits fire spread between individual trees. A lack of ladder fuels which permit fire to travel from ground to treetop will also reduce the risk of crown fires. Land managers could consider thinning woodlands and reducing ladder fuels to reduce the risk of crown fires.

Re-wetting bogs through drain blocking and wider peatland restoration may also increase wildfire resilience. Some re-wetted areas will present a barrier to wildfires in most conditions. However, the scale of peatland restoration is currently small relative to the whole landscape and fire fronts could be expansive before any kind of re-wetted landscape is encountered. The ambition within the Cairngorms National Park is to bring some 38000ha of peatland under restoration. This is a challenging target, but the full extent of peatland restoration can only influence a small proportion of a 4500km^2 area. It is also the case that many restored areas will still dry out to a significant extent during periods of sustained dry weather and will not be an effective barrier to fire. Peatland restoration will also not increase fire resilience across large areas of dry heath which is the dominant vegetation type across much of the National Park. Peatland restoration is likely to increase wildfire resilience to some extent over time, but its impact is not yet known.

As data and research develops it will become increasingly possible to model fire behaviour in continuous high fuel load areas under different weather conditions, including how fire would spread, what natural barriers would contain it, and the resource requirements of fighting eg a 1,000ha wildfire under Scottish conditions.

4.4 Increasing wildfire resilience within high fuel load areas

Building wildfire resilience in a landscape to reduce the impact of any wildfires that start involves managing or influencing vegetation. This can be done in three main ways:

- Reducing fuel loads. This can be done either in localised areas which are of sufficient scale to reduce fire intensity and allow people to fight the fire effectively (firebreaks), or by reducing fuel loads throughout a significant proportion of the landscape to reduce the impact of any fire across a wide area as muirburn can do.
- By creating fire resilient vegetation eg mature pinewoods. Mature woodland can be relatively fire resilient, but it takes many decades to develop that resilience. Young, growing trees are usually accompanied by a tall, dense field layer which can burn intensely.
- By increasing the heterogeneity of vegetation which can also help to reduce fire intensity through the creation of natural firebreaks eg by raising water tables and enabling bogs to flourish and hold more water on the hill. Generally, a mosaic of different types and ages of vegetation acts to slow the spread of fires eg a blaeberry sward is much more fire resistant than a heather sward.

Recommendation: Land managers should consider managing vegetation to reduce fuel loads at strategic points in the landscape. All land managers should consider how best to break up fuel loads with natural and man-made firebreaks.

Recommendation: Land managers should consider maintaining and enhancing natural firebreaks eg mature woodland and wetlands.

Recommendation: Consider the provision of water for firefighting eg by re-wetting, creating fire ponds or maintaining access to natural water bodies.

Recommendation: All woodland landholdings should maintain thinning operations and consider continuous cover silvicultural techniques as opposed to clear fell and re-plant. Care should be taken to reduce the development of ladder fuels.

4.5 Firebreaks

Where fuel loads are high and continuous, then fires can only be fought effectively where there are firebreaks in the landscape. A firebreak in this plan is defined as a non-flammable area or a zone of short vegetation which acts to slow or stop the spread of a wildfire by depriving it of fuel. Firebreaks can be linear features in the landscape or more complex vegetation mosaics.

Natural firebreaks may be rivers, lochs, scree slopes or areas of less combustible vegetation. Man-made firebreaks can be roads, hill-tracks, grass fields and areas where vegetation has been cut or burned.

Any firebreak will have limitations. Wildfires can start more or less anywhere in the landscape and wind speed and direction will vary on any one day. A firebreak may not be in the right place to prevent fire spread or it may not be wide enough to slow or stop wind driven fires. Firebreaks need to be maintained as vegetation regrows on areas which have been cut or burnt or re-colonises the middle strip of hill tracks. Clearing vegetation may also conflict or appear to conflict with conservation and landscape objectives. Firebreaks can be highly visible and can stand out in the landscape. The purpose and benefits of man-made firebreaks may therefore need to be communicated to the wider public.

Some landowners may wish to avoid creating firebreaks principally because of the maintenance requirement that is then established. The cost of maintaining firebreaks which may, on the day of a fire, turn out to be in the wrong place or insufficient to hinder a fire, is seen as too high.

Recommendation: Land managers should map the natural and man-made firebreaks for the landholding, describing maintenance regimes and identifying where supplementary measures will aid the protection of assets and minimise the risk of wildfires spreading.

4.6 Creating man-made firebreaks

Where man-made firebreaks are being created, considerable thought should be given to their position in the landscape. The key considerations are:

- Where are fires likely to start and therefore where are firebreaks best positioned to stop those fires spreading.
- What natural and man-made assets require protection and how can the position of firebreaks best perform that function.
- Positioning firebreaks to be effective against the wind direction in anti-cyclonic conditions is also sensible.
- Minimising the landscape impacts.

Man-made firebreaks can be created through cutting or burning. Options for cutting include the use of a tractor mounted swipe or a robocutter. Use of a tractor mounted swipe has the advantage of cutting a two-meter width in one pass. However, swipes break on rocky ground and tractors may be unsafe on steep ground. The robocutter is remote controlled so does not put an operator at risk on steep ground. It cuts a narrower strip and their use is expensive. Nevertheless, the use of remotely controlled, highly manoeuvrable cutting equipment, which chews up plant material to a fine mulch, is potentially a useful innovation in firebreak creation.

Burning firebreaks can be carried out in combination with cutting. Burning against a freshly cut strip widens out the firebreak in a safe manner. The key advantage of burning firebreaks is that the task reinforces the skills of firefighting. Practitioners use firefighting equipment and learn about fire behaviour as they proceed, all within a relatively safe environment. Burning firebreaks is potentially one means of retaining fire fighting skills on estates where muirburn has ceased.

Man made firebreaks often exist in the landscape in the form of hill tracks. The effectiveness of such firebreaks can be enhanced by swiping the vegetation on both sides of a track. Flames approaching the track are reduced in height by lack of fuel at the trackside and it is therefore harder for the fire to cross. Strips of vegetation which can develop in the middle of a track can reduce the landscape impact of a hill track but negate its effectiveness as a firebreak. Where the importance of a firebreak is considered to be an overriding factor, land managers should consider improving their effectiveness as firebreaks by removing the middle strips of vegetation and cutting back vegetation on the sides. Any work on hill tracks may be subject to planning controls.

All firebreaks need to be maintained which means keeping them free of re-growing, flammable vegetation.

Other approaches to creating firebreaks through reduction in fuel loads include the creation of vegetation mosaics. Techniques include grazing cattle around the edge of forests with cattle movements controlled by “no-fence” collar technology, and the use of tractor and swipe or robocutters to cut large areas of heather and promote blaeberry, which may increase fire resilience for a decade or more. Some estates have cut considerable areas of long heather with robocutters and have significantly increased fire

resilience in the landscape by doing so. Re-wetting areas by blocking drains in previously drained peatland is likely to increase fire resilience to some extent. A combination of patchy cutting combined with cattle grazing at a forest edge and re-wetting, may create areas where fire intensity will be reduced, enabling firefighters to tackle flames. Such interventions are likely to increase wildfire resilience to some degree but are as yet largely untested by wildfires in Scotland.

Recommendation: Land managers should maintain and enhance existing artificial firebreaks.

Action: The Park Authority to ensure that recommendations and actions within the Integrated Wildfire Management Plan are appropriately considered within Planning policy.

4.7 Frequency of firebreaks in the landscape

The number of firebreaks required within a landholding depends on several factors such as size of landholding, the number of locations where ignition is likely, fuel loads, topography, the number and size of features which should be protected from fire, and the proximity of settlements. High fuel loads require more frequent firebreaks to stop fires from quickly becoming too intense to fight. Steep slopes allow fire to spread more quickly than flatter areas and therefore may require more firebreaks. Depending on the direction which a fire is advancing, valleys and ridges can be both barriers to fire spread and channels enabling fire spread. To be effective, firebreaks need to both cross valleys and be constructed parallel to ridges. Areas near settlements or infrastructure may benefit from firebreaks.

Firebreaks are often a prominent feature in the landscape of hotter and drier countries. Firebreaks may be tens of metres wide, bulldozed down to bare soil and at regular intervals across the landscape. Experience in Scotland has demonstrated that a wind-driven fire in long, dry heather can grow in intensity to be beyond the ability of firefighters to tackle on the ground before it has travelled 50-100 meters. The flanks of such a fire can be controlled but flames at the fire front will quickly become too big to approach. This suggests that firebreaks in a high and continuous fuel load environment need to be quite closely spaced.

In reality, the density of firebreaks required to make a truly fire-resistant landscape in a high fuel load environment is likely to conflict with the objectives of many land managers in the National Park, the special landscape qualities and would generate significant criticism. It is possible attitudes around firebreak creation will change over time if large fires do occur.

5. Wildfire and Communities

Wildfires can threaten scattered housing and settlements. The risk to property from wildfire is generally very low but there have been occasions when wildfire has threatened isolated houses in the Highlands in recent years. Protecting people and property is paramount in fire management planning. This section of the Plan identifies the main factors to consider when assessing the level of risk to settlements, provides an overview of settlements in the National Park, and encourages land managers to work closely with communities in assessing risk and mitigation.

Settlements in the National Park are mostly surrounded by features which offer natural and man-made firebreaks, such as rivers, roads, farmland and other areas of low fuel loads. Wildfires will vary in intensity, size and speed of travel. Features which constitute a barrier to wildfire in most conditions may not be an effective barrier in all conditions. In very dry and windy conditions fires can jump rivers and roads and can burn across grass fields. However, the conditions which enable such spread may not have occurred yet in Scotland or are currently very rare.

Under current conditions in Scotland, settlements in the National Park are largely well protected by roads, rivers and agricultural land.
In developing fire plans and considering land management objectives, it is crucial that land managers consider the factors which protect settlements and reduce the risk from wildfire. Land managers are encouraged to consider the factors as set out below when conducting wildfire Risk Assessments on landholdings in proximity to the settlements listed.

Settlement	Description of barriers and fuel loads
Dalwhinnie	Protected by the railway line and agricultural land to the West and by roads to the North. By the River Truim and A9 to the East and roads, river, fields and areas with low fuel loads in the field layer to the South.
Laggan	Fields and roads largely on all sides.
Newtonmore	Predominantly surrounded by fields and with roads, railway and River Spey adding extra protection.
Kingussie	Agricultural land to the South, A9, railway and River Spey to East and low fuel loads in field layer in woodland to North and West.
Insh	Largely surrounded by fields but with variable fuel loads in surrounding woodlands.
Kincraig	Protected by Loch Insh to South, A9 to West and by low fuel loads in adjacent woodlands.
Aviemore	Largely protected by River Spey, A9 and railway.
Aviemore to Coylumbridge corridor	River Druie to the North. The corridor is bisected by the road. High fuel loads in proximity to buildings could increase risk in extreme conditions.
Coylumbridge	Two roads and River Druie act as barriers. High fuel loads in woodlands to North and North East could pose risk in extreme conditions.
Glenmore	Largely surrounded by Loch Morlich and extensive road network, including side roads and forest tracks. Variable levels of fuel loads within surrounding woodland.
Boat of Garten	Agricultural land to North and River Spey to East. Fuel loads generally low in woodlands but higher fuel loads can be found in woods to South West.
Carrbridge	Golf course and fields to North and North East. Fuel loads in woodland to South and South East are generally well broken up but could pose some risk in extreme conditions.
Dulnain Bridge/ Skye of Curr	Fields to North, roads and River Spey to East with generally low fuel loads in woodlands to West and south.

Nethybridge	Fields to North and North West. Varying fuel loads in woodland to South and North East. High fuel loads in proximity to buildings could increase risk in extreme conditions.
Grantown on Spey	Fields and golf course to East, North East and much of West. Field layers generally low in woodland to South and West.
Cromdale	Largely surrounded by fields, road and River Spey. Varying fuel loads in woodland to South West.
Glen Livet area	Generally surrounded by fields and roads.
Tomintoul	Generally surrounded by fields and roads.
Strathdon	Generally surrounded by fields.
Ballater	Generally surrounded by fields, River Dee and roads. Low fuel load in field layer throughout much of Craigendarroch Wood.
Braemar	Generally surrounded by River Dee, roads and fields. Low fuel loads in Morrone birchwood and nearby woodlands.
Dinnet	Fuel loads in field layer are generally low in surrounding woodlands.
Killiecrankie	Generally surrounded by roads, rivers, railway and fields.
Blair Atholl	Generally surrounded by roads, rivers, railway and fields.
Calvine	Generally surrounded by roads and railway, fuel loads managed in moorland to South West.

In assessing and managing any potential risk to people and property in and around settlements, residents should be consulted and have the opportunity to provide input into fire management planning. The management of farms, crofts and smaller landholdings within and immediately surrounding settlements will play a part in the overall wildfire risk. Residents can play a positive role in reducing the risk of ignition, providing an early warning system and, in some cases, directly supporting a fire fighting team. Residents can also reduce the risk of damage to property by being aware of, and managing if desired, the amount and type of vegetation growing around their properties. By early involvement, land managers can work in co-operation with communities to improve wildfire planning and management.

Recommendation: Land managers should engage with local farms, crofts, community groups and local forums to discuss priority assets, mitigation measures and emergency planning.

6. Resource, monitoring and review

The production of the Integrated Wildfire Management Planning does not represent an end point in discussions around wildfire resilience. Recommendations and actions in the Plan will need to adapt and require updating over time as priorities evolve, the climate changes and lessons are learned from incidents that do occur.

Byelaw enforcement will require resource. The Park Authority is committed to providing ranger support, most notably in places where the risk of ignition is high and when there is a high fire risk warning in place. The Park Authority will further support implementation through the provision of signage for estates and land managers, and in communicating responsible behaviour messaging.

The Climate Adaptation Fund has supported estates in the purchase of firefighting and cutting equipment and has funded training in its use. The Park Authority intends to continue to support increasing fire resilience in the form of capital grants, depending on budget, but grants may be dependent on having an adequate fire plan in place where that is appropriate.

The Park Authority will maintain oversight of the uptake of recommendations and delivery of actions in the Plan. Progress will be periodically reported to the Cairngorms Upland Advisory Group for discussion and collaborative action to support and accelerate delivery.

To support the uptake of recommendations in the Plan, the Park Authority and partners, will undertake the following actions:

Action: review the Plan annually with Cairngorms Upland Advisory Group and Park Authority board performance committee.

Integrated Wildfire Management Plan

Annex 1

Example Wildfire Risk Assessment

Site Name: Example Site **Location:**

What are the fire hazards?	Who/What might be harmed and how?	What are you already doing to manage risk?	Initial risk rating			What else do you need to do?	Revised risk rating		
			L	S	R		L	S	R
Wildfire could adversely impact upon the SSSI and SAC as well as the protected species	Wildlife	• Eg Partnership working with SFRS including development of a Wildfire Plan.				Eg ranger patrols, signage etc			
Risk of ignition of wildfires and fire spread from bonfires/barbecues set on site.	Staff / public / Fire fighters	• No bonfires during dry spells, water containers taken if burning up. • Bonfire sites clear of debris and at a safe distance from scrub and trees • Do not light bonfires during excessively high winds	2	3	6 Moderate				

Injury and fatalities resulting from wildfires on site.	Staff / public / Fire fighters	• Visitor notices about wildfire risk have been located at entrance points during periods of high risk • Staff have received wildfire response training and have had joint training exercises with Fire and Rescue Service	1	5	5 Low				
Electrocution by 33kv overhead power lines during response to wildfire due to smoke and use of water.	Staff / public / Fire fighters	• Powerlines are clearly marked on the Wildfire Plan • Staff will inform SFRS that the site has overhead powerlines • Vegetation under powerlines is managed by electricity contractors on a regular basis	2	3	6 Moderate	• Wildfire Plan includes strategic vegetation management to reduce the risk to extreme fire behaviour	2	2	4 Low
Fire or smoke would impact on public road - adjacent to or within 500m of the site and that could cause congestion.	Public	• Plan produced by SFRS to divert traffic and minimise disruption	3	3	9 Moderate	• Road to be clearly marked on the Wildfire Plan. • Wildfire Plan will include vegetation management to reduce the			

						risk to extreme fire behaviour near road • 30m broadleaved woodland will be retained along the boundary of the road and will be actively managed to increase resilience			
Wildfire causing evacuation, disturbance, damage or destruction of adjacent private residential property	Public / Fire fighters	• Properties clearly marked on the Wildfire Plan	4	5	20 Unacceptable	• 30m wide fire break will be established adjacent to the boundary of the property to provide defendable space and will be cut annually • Wildfire Plan will include vegetation management to reduce the risk of extreme fire behaviour near properties	2	5	10 Moderate

Are there more than X visitors a year to the site?	Staff / public / fire fighters	• Notices are put up warning of the dangers of fires during dryer months • Discussion with SFRS to ensure adequate planning and cooperation in the case of a wildfire • Public is asked not to light fires/ barbecues.	3	4	12 High	• Fire safety will be incorporated into the next site information day	2	3	6 Moderate
The site is regularly used by the public, especially during bank and school holidays (especially spring and summer)	Staff / public / fire fighters	• Notices are put up warning of the dangers of fires during dryer months • Public are asked not to light fires/ barbecues.	2	2	4 Low				

Annex 2

Example fire plan courtesy of NatureScot

Estate name
2023

To be used in conjunction with 1:50,000 O.S. map no X Grid ref NH XXXXXXXX
See also: Invereshie and Inshriach NNR - SFRS Wildfire Plans - 9 September 2022 (A3822789)

Prepared by:

Signature:

Date:

Version	Date	Author
001	October 2015	
002 – Reviewed and updated	June 2017	
003	January 2018	
004	May 2019	
005	May 2020	
006	Feb 2021 and 2022	
007	Sep 2023	

Contact names and telephone numbers
In the event of a fire, please follow the protocol in Fire Card in Annex 1. The following staff should be contacted in the order below:

NAME	CONTACT	TELEPHONE

Access

The Reserve is generally only suitable for All-Terrain Vehicle (ATV) or four-wheel-drive vehicular access. There are several Forestry and Land Scotland (FLS) access tracks suitable only for four-wheel-drive and off-road vehicles and the main access points start at the following grid references: NH 860 060, NH 852 043, NH 858 033, NH 854 018 and NH 852 012. There are also two tracks, within the National Nature Reserve (NNR), suitable only for four-wheel-drive and off-road vehicles, and these can be found at grid references NH 880 057 and NH 859 010. Beyond these tracks only all-terrain vehicles would be able to operate. Only trained and experienced operators should operate ATVs in this type of terrain.

In many instances early helicopter use will be vital to minimise damage and safeguard personnel.

Fire emergency procedures

Any member of staff receiving a fire notification should detail the available information about the fire and take all the relevant contact's details. Confirmation that a 999 call to the fire brigade has been made, should also be sought.

As all the NatureScot South Highland firefighting equipment is based at Creag Meagaidh it is important that the Reserve Manager is contacted immediately to ascertain the appropriateness of calling out the NNR team plus equipment. This judgement will be made on the information available, the recommendations made within the fire plan and the level of risk and consequence at the time. A decision will also have to be made as to which will be the most appropriate rendezvous point for all concerned to meet.

Emergency procedures to be followed in the event of a fire are detailed on a fire card. This contains all relevant information, including a section of Reserve map indicating locations of firefighting equipment and Fire Rendezvous Points. This card will be displayed in Reserve vehicles and will be issued to property owners adjacent to the reserve, and to office-based staff.

Property

The Reserve is bounded by Glenfeshie to the south, FLS Inshriach to the west and Rothiemurchus to the north and east.

The NatureScot Officer In Charge (OIC) must contact owners from the list below if that owner's property is threatened. Owners may be prepared to provide trained personnel to help fight a fire on Invereshie and Inshriach. Untrained personnel can assist in supporting firefighting operations only.

Property owners contact list

PROPERTY NAME	CONTACT	TELEPHONE
List of neighbouring properties		

Helicopter use and procedures

In the event of fire on an NNR that requires helicopter firefighting support the following procedure should be followed:

1. If lives or property are at risk the Fire Service will call the helicopter. If a helicopter is to be called to address fire on NatureScot land or for conservation reasons, with neither lives nor property at risk, the request will be made by NatureScot staff on advice from the Fire Service.
2. All NNR Reserve Managers, and Operations Officers who manage reserves, have authority to call out helicopters for one day's fire fighting duties if required. The cost of this will be borne centrally; it does not come out of the unit budget.

Helicopter Services Contract numbers

PDG Operations
https://www.pdgaviationservices.com/
Contact number - 01667 464400
Out of hours emergency contact - 07778 131113

All PDG operations staff area aware of the contract:
If PDG aviation is not available then we can use an alternative but with Managers' approval:
SKYHOOK
https://www.skyhookhelicopters.co.uk/
Central Base at Stronafyne Farm, Arrochar. G83 7AJ

Helicopter landing sites

LOCATION	GRID REF	VEHICLE ACCESS
Glider Landing Strip		All

Ordering a helicopter

PDG HELICOPTERS 01667 464400
Out of hours emergency contact 07778 131113

You will be asked the following:

- Caller's name
- Area
- Telephone number: mobile and/or land line
- Call out 'Stand-by' or 'full attendance'
- Location of fire
- Helicopter meeting point:
  Invereshie and Inshriach NNR
- Weather conditions / wind strength
- Visibility
- Landowner's name / address

Remember to obtain an estimated arrival time from PDG Helicopters

Note: A helicopter will not operate during the hours of darkness

Upon arrival of the helicopter, the NatureScot OIC and Fire and Rescue Service Senior Officer will liaise with the pilot and ground staff to organise an attack on the fire. The equipment storage and landing site must be made clear to all parties. The NatureScot OIC and Fire and Rescue Service Senior Officer along with helicopter staff may fly round the fire site in order to plan their operation and to ensure the best use of the helicopter.

Emergency services' contact numbers

Highland and Islands Fire and Rescue Service

- Emergency calls via (9) 999
- Highland and Islands Fire Control Centre (Inverness) 01463 227000 (24 Hours)

Police

- Emergency calls via 999
- Aviemore Police Station 01479 810 222

Electricity

- Scottish Hydro Electric 0800 300000
- Emergency centre 0800 300999

Medical

- Scottish Ambulance Service - emergency calls via 999

Fire equipment store and NatureScot office

- Creag Meagaidh NNR, Aberarder, Kinlochlaggan Tel: 01528 544 265

No.	TYPE	*LOCATION*	GRID REF
1	Crew Cab Land Rover 4wd Pick-up		
1	Polaris ATV and Honda 500 Quad		
3	Road trailers		
1	Argocat with (fire fogging kit)		

1	Quad + (fire fighting trailer)		
2	Knapsack sprayers		
1	Fire trailer with fogging system and water tank and with additional pump to take water from a burn etc. Various Hoses, couplings and nozzles		
1	Leaf Blower		
10	Fire Beaters		
1	Honda water pump and suction hose		

Water supplies

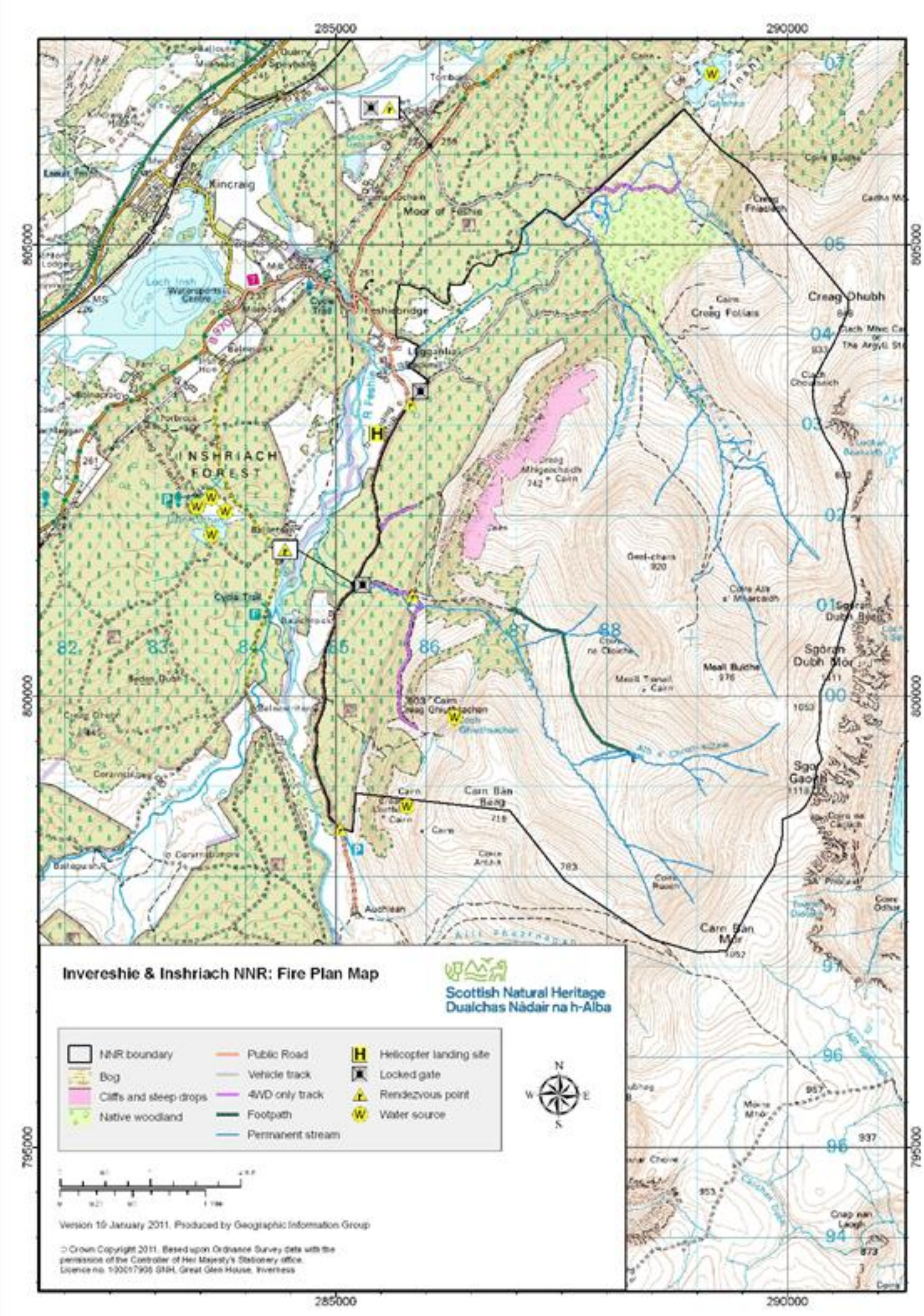
The nearest main water supply is Loch Insh Grid Ref : NH 830 045

NAME	Grid Ref	DESCRIPTION	HELICOPTER OR Pump	Quantity
Loch Insh	NH 830 045	Large Loch with watersports centre	Helicopter	Seasonal dependant on osprey nesting.
Loch an Eilein	NH 895 075	Loch surrounded by woodland	Helicopter	All Year Round
Loch Gamhna	NH 891 068	Loch	Helicopter	All Year Round

Loch Ghiuthsachan	NN 863 998	Small hill Lochan	Helicopter	All Year Round
Unnamed Lochan	NN 858 988	Small hill Lochan	Helicopter	All Year Round
Unnamed Lochan	NN 853 994	Small hill Lochan	Helicopter/Pump	All Year Round
Allt Coire Follais	NH 882 056	Small Stream	Pump	All Year Round
Allt a Mharcaidh	NH 881 044	Small Stream	Pump	All Year Round
Allt Ruadh	NH 860 010	Small Stream	Pump	All Year Round

Logistics

The NatureScot OIC will contact NatureScot Area support to organise food/water and relief crews if required.


Invereshie & Inshriach NNR: Fire Plan Map
Scottish Natural Heritage
Dualchas Nàdair na h-Alba
NNR boundary
Bog
Cliffs and steep drops
Native woodland
Public Road
Vehicle track
4WD only track
Footpath
Permanent stream
Helicopter landing site
Locked gate
Rendezvous point
Water source
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285000
290000
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