



Appendix 16 – Fire

UKFS stipulates that forests should be planned to enhance their resilience and mitigate the risks posed to their sustainability by the effects of climate change. Associated management should also enhance the potential of forests to protect society and the environment from these same effects.

Whilst it is not possible to prevent wildfires completely, wildfire resilience can be improved through good forest planning and management.

In the case of the Strathspey LMP, wildfire resilience is supported through:

- **Reducing the likelihood of wildfire incidents:**
 - Provision of precautionary signage at public thresholds where fire raising is likely or fire risks are high due to weather conditions.
 - Increased staff/ ranger presence in areas of high public use during periods when the risk of fire is high due to weather conditions.
- **Reducing the potential extent of wildfire if it does occur through forest design:**
 - Restoration of peatland through rewetting.
 - Planting and conserving riparian native woodland corridors that sub-divide coniferous plantation into smaller areas. These areas are less volatile/ permeable to wildfire spread.
 - Varying the species and age structure throughout the forest to provide a mosaic of habitats, some of which will reduce the fuel load available to fire.
 - Maintaining roads and infrastructure at a standard that enables good vehicle access in the event of a fire as well as providing firebreaks.
- **Reducing the potential severity of damage and impacts on people and the environment if fire occurs:**
 - Managing native or mixed woodland and open space around settlements, properties and buildings.
 - Providing pro-active fire reporting, site access and fire monitoring support to Scottish Fire and Rescue Service (SFRS).
 - In the event of a fire FLS staff will instigate suppression activities at SFRS' discretion and direction.

The current risk of wildfire starting on land within the LMP area is moderate to high. Public access ranges from informal, short duration walking or cycling through to longer stay recreational activities and overnight camping. There is a history of wild camping within the landholding and a number of wildfires have been recorded over the years.

Visitor numbers to the Cairngorms National Park have increased significantly in the last few years and with this, increased campers and campfires have been recorded on FLS ground. Camping is generally focused around Glenmore on the shores of Loch Morlich and An Lochan Uaine (Green Lochan) as well as Loch an Eilein in Rothiemurchus, close to carparking and facilities. However wild campers are also known to venture further into the forest as well as the open hills beyond. The concentration of people camping around the lochs makes it easier to focus an increased staff presence to deliver important behavioural messages and monitor/ manage campfires during peak times.

A large mobile LED road sign is also used on the main Glenmore access road to increase visitor awareness by highlighting the risk of wildfires at key times.

Muirburn is undertaken on the neighbouring open ground on Rothiemurchus Estate, to the south of the Rothiemurchus forest block. Open habitats lie between the forest and Rothiemurchus Estate and the nature of fire (not accounting for wind direction) is usually uphill, which would take any uncontrolled burning away from the forest block. FLS relies on neighbours following the Muirburn Code which includes a legal requirement to reduce the possibility of fire spreading and giving at least 7 days' notice in writing of any intention to muirburn to landowners within 1 km.

The risk of wildfire potentially spreading on FLS land is comparatively low on account of the prevailing maritime climate (mild, habitually moist/humid conditions). There is however a well-established pattern and occurrence of high-risk conditions in early springtime when periods of dry, bright and breezy weather can persist for weeks and accumulations of dead vegetation quickly become tinder dry at a time when new lush grass/bracken has yet to re-emerge to reduce overall combustibility. Climate change modelling predicts an increase in periods of dry weather not only in springtime but also with warmer periods during the summer. This will increase the capacity of the landholding's forests and open ground vegetation to burn if wildfire occurs. Native deciduous woodland is less volatile in both the dormant (leafless and wet) season and summer "full leaf" (leaves with high water content and low calorific value), with a comparatively humid understorey.

Through the management of the current forest structure which contains a range of forest age, species and management, the risks of wildfire spreading throughout the forest are reduced. Thinning and strip felling the native Scots Pine crop reduces the likelihood of fire which is most at risk of fire at the thicket stage (5-20 years) if left un thinned.

The removal of non-native conifers to support biodiversity and conservation will reduce the diversity of productive conifer species however, the replacement of these high-density, uniform age coupes with more open, Scots pine forest with broadleaves and open habitats will reduce the overall risk of fire spreading.

Increasing species diversity within the broadleaved element of the forest will be achieved through enrichment planting of under-represented native broadleaves associated with Caledonian pinewoods eg. Aspen, alder, rowan, holly, cherry and oak. In time these trees will also self-seed and add to the species diversity and resilience of the forest to fire.

Establishing networks of riparian deciduous woodland over the next twenty years will create greater resistance to potential wildfire spread. Section 7.2 presents data representations of broadleaf/conifer composition over time and shows an increase in the broadleaved component (from 3% to 19% of the forest area). Monitoring and managing for fire risk will still be essential over the same twenty-year period as areas of young, restocked trees and fallow ground represent a greater risk of combustion on account of the higher amounts of accumulated ground vegetation amongst young trees. These areas will dry out faster than a mature woodland understorey in warm, dry and breezy conditions and therefore represent a greater, transient fire risk than from an established forest stand.

The road network throughout the forest in Strathspey provides an additional level of mitigation and consists of roads and tracks which are well mapped and in good condition. Each roadline provides both a firebreak and a means of access for firefighting teams. These will continue to be maintained to ensure access for all operations and to retain their mitigating value to fire risk. The removal of gorse, scrub and young naturally regenerating trees along the forest track edges will form part of the maintenance work being undertaken to reduce the fuel load along forest tracks as well as increasing the width of barrier/ fire break.

The south facing aspect of the slopes at Glenmore increase the susceptibility of the forest to the risk of fire but access is good. Rothiemurchus is the one area in the forest where access is restricted due to the lack of forest tracks. It is managed as Minimum Intervention due to its high ecological value which also brings with it, a higher risk of wildfire spreading due to the presence of a thicker understorey. However, the mix of species found in the forest, includes broadleaves, particularly around riparian zones which will help reduce the rate of any wildfire spreading.

FLS is committed to providing a out-of-hours service where staff can be contacted to provide assistance to the SFRS in the event of a fire incident.

Where helicopters are required to extinguish fires, there is a helicopter landing-pad at Glenmore Lodge with easy access to Loch Morlich for water in addition to The Hayfield. Around Inshriach, neighbours have allowed helicopters to land and refuel on nearby fields in the past.

Table 1 below highlights the potential risks within Strathspey and the actions/mitigation being undertaken to reduce them.



Table 1: Risk assessment for Strathspey LMP:

Risk Source	Risk Level – High/ Moderate/ Low	Mitigation
Ignition Sources		
History of wildfire	Moderate - High History of wildfire, wilful fire raising, or antisocial behaviour	During high fire-risk weather conditions: - Precautionary signage at public car parks and thresholds including mobile LED road sign on main vehicular access to Glenmore. - Increase staff presence around known campfire hotspots.
High visitor numbers, recreation routes, campsites	Moderate – High Visitor numbers are high when the weather is good, particularly around Glenmore. Recreation routes and camping activities are highest here but also exist throughout the forest	During high fire-risk weather conditions: - Precautionary signage at car parks and public thresholds. - Increased staff presence in busiest visitor areas.
Fuel		
Surface fuels in young stands before canopy closure	Moderate - Mix of age structure throughout forest - surface fuels in young stands before canopy closure	Manage forest as a mosaic of age structures and species to minimise fuel load at any one time. Broadleaves and riparian corridors will act as buffers.
Surface fuels in open or thinned woodland	Moderate - Mix of open or thinned woodland as well as closed-canopy stands. Existing larch firebreaks/belts are being removed as the forest is moved towards a native pinewood	Different silviculture practices throughout the forest will minimise fuel load at any one time.
Large amounts of dry understorey or ground vegetation, especially dead vegetation after winter	Moderate - Medium amounts of dry understorey or ground vegetation, especially dead vegetation after winter	Maintain varied age structure and species diversity throughout forest, restoration of peatland and establishment of riparian/ broadleaved buffers.
Tree health damage, die-back	Low - Healthy trees	Monitor tree health and manage diseased/ damaged trees.
Tree mortality, windthrow, deadwood, or brash	Low - Managed levels of deadwood and brash	Monitor tree condition and removed brash where necessary. Match tree species to soil type and site conditions when restocking.

Risk Source	Risk Level – High/ Moderate/ Low	Mitigation
Fuel		
High-risk (flammable) species (e.g. heather, gorse, young conifers)	Moderate - Gorse and young conifers present but also Mature trees with a thick or corky bark (e.g. Scots Pine)	Maintain mature trees, particularly Scots pine element within forest. Manage gorse and scrub along roadsides.
Free draining soils. Organic or dry peat soils	Moderate - Mixed soils across the forest including dry peats and organic soils as well as some high water-table, mineral soils.	Restore deep peat and keep wet flushes open.
Site Conditions & Land Use		
Dry climate, light, drought-prone soils	Moderate – mixed soils throughout forest	Restock with tree species appropriate for soil type and conditions to ensure healthy trees.
Slopes, gullies, south facing slopes	Moderate – Mostly rolling/flat ground but the slopes above Glenmore have a south facing aspect	Restock with tree species appropriate for soil type and conditions to ensure healthy trees. Riparian buffers and smaller coupes to reduce risk in event of fire. Mosaic of habitats including open ground.
Flammable habitats or a history of wildfire nearby	Low-Moderate – mainly open hill ground and forest on neighbouring ground. History of muirburn on adjacent landholding at Rothimurchus.	Manage the forest as a healthy mosaic of habitats and species. Establish broadleaved buffer where appropriate. Maintain good relations with neighbours, collaborate where necessary and be vigilant during muirburn season.
Assets and values at risk		
Close to people, property, utilities, or infrastructure	Moderate – Glenmore has the highest number of adjacent private properties and visitor facilities. There are also private properties located along the Western boundary of Inshriach. Small number of power lines present.	Establish and maintain open areas and broadleaved buffers close to private properties.
High value ecological, historical, or business assets, including timber	High – The forest has multiple National and international designations for habitats and species as well as the landscape.	Maintain and establish a mosaic of natural habitats: Restoration of the native woodland and open habitats including the restoration of deep peat. Maintain varied age structure and silvicultural practices throughout forest. Establish under-represented broadleaved species associated with Caledonian pinewoods through enrichment planting. River restoration projects will include the naturalisation of watercourses and the restoration of flood plains which will connect habitats and provide resilience.

Risk Source	Risk Level – High/ Moderate/ Low	Mitigation
Response		
Remote site, no on-site staff (late detection)	Low – Neighbours/ local residents and recreation users would detect fire early.	Increase staff conducting patrols and surveillance on site during periods of very high or extreme fire danger.
Inaccessible, poor roads, low weight-limit on bridges	Low - Good site access, good roads and hard standings. Parts of Rothiemurchus are the only areas where road access is limited.	Maintain roads and access.
No water source nearby	Low - Water source nearby e.g. Loch Morlich, An Lochan Uaine, Uath Lochans, Loch an Eilein . Established helicopter landing areas located within and around the forest.	