



Angus Glens LMP Fire Plan

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 Angus Glens LMP, wildfire resilience is supported through:

1. 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.

2. Reducing the potential extent of wildfire if it does occur, through forest design/ land management actions:

- Restoration of peatland through rewetting. Drain blocking in other areas (e.g. wet heath/ grassland) will also raise the water table across the site.
- Controlling vegetation cover in open habitats to reduce fuel loads by mowing/flailing and grazing where possible
- Planting and conserving riparian native woodland corridors (at least twice as wide as the tallest conifer tree) that sub-divide coniferous plantation into smaller areas. These areas are less volatile/ permeable to wildfire spread.
- Creating a mosaic of habitats, some of which will reduce the fuel load and increase the amount of water held on the land.
- Maintaining roads and infrastructure at a standard that enables good vehicle access in the event of a fire as well as providing firebreaks.

3. Reducing the potential severity of damage and impacts on people and the environment if fire occurs:

- Providing pro-active fire reporting, site access and fire monitoring support to Scottish Fire and Rescue Service (SFRS). Maintaining up to date information on site and staff training on emergency procedures.
- FLS is committed to providing an out-of-hours service where staff can be contacted to provide assistance to the SFRS in the event of a fire incident, through the regional duty officer rota.
- Where helicopters are required to extinguish fires, there is a helicopter landing area at Kilbo Bothy and access to water bodies on neighbouring land.
- Managing native or mixed woodland and open space around properties and buildings.

The current risk of wildfire starting on land within the LMP area is low to moderate. Public access is mainly informal, short duration walking or cycling, with some overnight camping at Glen Doll Ranger Centre car park.

Visitor numbers to the Cairngorms National Park have increased in recent years. Glen Doll has the FLS 'Stay the night' scheme for vans/motorhomes, as well as picnic tables and toilets [check this with Fiona]. Glen Prosen, however, generally attracts far fewer visitors and has no facilities. The Angus Alive ranger service in Glen Doll provides an important staff presence to deliver important behavioural messages and monitor/manage visitors during busy periods in Glen Doll. Further funding in the future may enable this service to expand into Glen Prosen, should it be necessary.

Muirburn is undertaken on the neighbouring open ground around both Glen Prosen and Glen Doll. 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. FLS does not currently undertake muirburn for the purpose of encouraging fresh heather shoots for grouse, and it is unlikely we will start this practice, as it is generally incompatible with tree growth.

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 understory. Increasing species diversity within the plantation element of the forest will be achieved through enrichment planting/ restocking of under-represented native broadleaves eg. Aspen, alder, rowan, holly, cherry and oak. In time these trees will also self-seed and add to the species diversity and fire-resilience of the forest. Establishing networks of riparian deciduous woodland over the next twenty years will create greater resistance to potential wildfire spread.

Monitoring and managing for fire risk will still be essential. On open land and also in areas of young, restocked and newly planted trees, and fallow ground, which all 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 understory 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 and open land provides an additional level of mitigation and consists of roads and ATV tracks which are well mapped and in good condition. Each road line 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. Table 1. below highlights the potential risks within Angus Glens and the actions/mitigation being undertaken to reduce them.



Table 1: Risk assessment for Angus Glens LMP:

Risk Source	Risk Level – High/ Moderate/ Low	Mitigation
Ignition Sources		
History of wildfire from people	Low History of willful fire raising, or antisocial behaviour	During high fire-risk weather conditions: - Precautionary signage at public car parks and thresholds - Increase staff presence around known campfire hotspots in Glen Doll via Ranger service
Visitor numbers, recreation, camping	Moderate Visitor numbers are high when the weather is good in Glen Doll, with some wild camping in the area.	During high fire-risk weather conditions: - Precautionary signage at car parks and public thresholds. - Increased ranger presence in busy periods. - Removal of fuel around high visitor zone areas of Glen Doll
Muirburn on neighbouring ground	Low-Moderate Seasonal muirburn takes place on neighbouring estates	Manage fire break around boundary where fuel load is increasing in open habitats? Maintain good relations with neighbours, collaborate where necessary and be vigilant during muirburn season.
Fuel		
Surface fuels in open habitats	Moderate Muirburn is no longer carried out on open ground in Glen Prosen, fuel load will increase before new native woodland is established	Undertake vegetation control, particularly of heather but also grasslands, via flail/swiping and grazing.
Surface fuels in open habitats/young planting before woodland established	Moderate – woodland establishment and restocking of plantation forest leave some areas with ground vegetation before woodland fully established	Manage forest as a mosaic of habitats to minimize fuel load across the site at any one time. Wet flushes/peat bogs 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, in both Glen Doll and Glen Prosen plantation.	Diversifying age and species structure throughout the forest will minimise fuel load at any one time.

Tree health damage, die-back	Low - Healthy trees	Monitor tree health and manage diseased/ damaged trees.
Tree mortality, windthrow, deadwood, or brash	Moderate – Temporarily high levels of deadwood and brash as a result of significant windblow events in recent years	Clear windblow where possible and recover as much brash as possible prior to restocking.

Risk Source	Risk Level – High/ Moderate/ Low	Mitigation
Fuel		
High-risk (flammable) species (e.g. heather, gorse, young conifers)	Moderate-High – Heather, grasses, young conifers and scrub dominate open areas	Undertake vegetation control by mowing/flailing and grazing, to produce mosaic across the site
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 peatland and keep wet flushes open, block man-made drains to increase wet areas.
Site Conditions & Land Use		
Dry climate, light, drought-prone soils	Moderate – mixed soils throughout forest	Establish tree species appropriate for soil type and conditions to ensure healthy trees. Restore hydrology across the site via drain blocking and managed open wet areas.
Slopes, gullies, south facing slopes	Moderate – steep slopes, some south facing	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 and manage open vegetation.
Flammable habitats or a history of wildfire nearby	Moderate – mainly open hill ground and forest on neighbouring ground. History of muirburn on adjacent landholdings.	Manage the forest and land as a healthy mosaic of habitats and species. 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	High – Glen Doll and Glen Prosen both have adjacent residential properties, as well as visitor facilities in the former. In glen Prosen there is a distillery and hydro scheme that are of high priority.	Establish and maintain buffers close to properties.
High value ecological, historical, or business assets, including timber	Moderate – 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. 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)	Moderate – Neighbours/ local residents and recreation users could detect fire early. Publicise how to alert FLS to wildfire if detected and keep up to date records of contacts.	Work with ranger service to conduct patrols and surveillance on site during periods of very high or extreme fire danger. Ensure all staff are aware of the Wild Fire Emergency Procedures and are able to escalate an alert accordingly should a fire be detected. Keep up to date list of contacts of local residents, neighbours, tenants.
Mostly accessible via road/track infrastructure	Low - Good site access, good roads and hard standings. Parts of Glen Doll are too steep for vehicle access.	Maintain roads and access.
No water source nearby	Moderate - Water source nearby is a drinking water reservoir (Backwater), though other small lochs are also found in Glen Clova. Helicopter landing area at Kilbo Bothy turning circle.	Need to agree water sources and landing/fueling sites for helicopter.