Forestry and Land Scotland | Coilltearachd agus Fearann Alba

North Region

Inverness Woodlands Land Management Plan 2019 – 2029

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We manage Scotland's National Forest Estate to the United Kingdom Woodland Assurance Standard – the standard endorsed in the UK by the international Forest Stewardship Council® and the Programme for the Endorsement of Forest Certification. We are independently audited.

Our land management plans bring together key information, enable us to evaluate options and plan responsibly for the future. We welcome comments on these plans at any time.

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Inverness Woodlands LMP 2019 - 2029

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Summary

Inverness Woodlands Land Management Plan (LMP) is an amalgamation of **Culloden Woodlands, Ord Hill, Craig Phadraig** and **Daviot**. Inverness Woodlands stretch from the Black Isle in the north to Daviot in the south, and from the western edge of the city of Inverness to Cawdor in the east. Inverness Woodlands cover an area of approximately 1,156 ha of largely mixed coniferous forest. The plan period extends from 2019 to 2029 (see **Map 1 - Location** for the LMP Boundary).

Operational management proposals for the ten year period are detailed in the following:

- **Section 5: Management Proposals** and
- **Map 4 a, b, c and d (Map Series 4): Management Maps**

Proposed management activities include felling and restocking, planting of suitable species, recreational facility maintenance and improvement, new woodland creation, forest road construction and upgrade, deer control and population monitoring, restoration of ancient woodland sites, and a range of species and habitat surveys.

What is important in the Inverness Woodlands?

- All these woodlands are important recreational facilities within the North Region. The proximity to the city of Inverness makes the forest accessible to a high number of visitors at all times of the year. With the exception of Daviot, the woodlands meet the Woodlands In and Around Towns (WIAT) classification, and play an important role in providing informal recreation opportunities for the city's population. It is highly likely with proposed and active housing development Daviot woodland will soon also meet WIAT criteria. It has been managed as such in recent years.
- Ord Hill and Craig Phadraig form part of the visual backdrop to Inverness, being prominent from many parts of the city and the main approaches towards the conurbation. As a result, the visual impact of felling operations on prominent faces can be immediate and dramatic.
- Ord Hill Fort and Craig Phadraig Fort are two nationally important Iron Age hill forts that are managed in accordance with their Scheduled Ancient Monument (SAM) Plans.
- Culloden Wood is within the Culloden Muir Conservation Area and the *Inventory of Historic Battlefields* area for the Battle of Culloden. Forest planning in this nationally important area will be undertaken in accordance with the Highland Council's *Culloden Muir Conservation Area Management Plan.*
- Access to coupes for management is insufficient in places; a few roads need to be upgraded.
- Riparian management of the River Nairn (for salmon fishing and conservation interest) at Daviot woodland.
- An ongoing partnership between FLS North Region and NHS Mid Ross Community Health, called "Branching Out", operating at Craig Phadraig woodland. This program offers eco-therapy for people experiencing mental health problems. Activities include bushcraft, wood working and cooking. This woodland is also used informally by patients resident at nearby New Craigs psychiatric hospital.
- Inverness Woodlands are an important resource for schools, other educational groups and special interest groups e.g. a local orienteering group using Ord Hill and the newly-built pet-free outdoor learning space developed in Culloden for school groups and local families. At Culloden, FLS also has close links with the Scottish School of Forestry and will continue to liaise with them regarding their use of Culloden Woodlands as an educational and skills training resource.
- There is a history of significant flooding in the residential areas downstream of Culloden woodland. As a result, Smithton and Culloden are designated as a "Potentially Vulnerable Area" in the Flood Risk Management Strategies (see **Appendix 14 - Smithton and Culloden Vulnerable Area**).
- In woodland adjacent to residential properties, the proximity of housing requires younger woodland trees to be thinned heavily to both visually soften the residential/forest boundary and limit the longer term concerns posed by large un-thinned trees adjacent to public spaces and property. Regular survey of mature trees along these woodland boundaries is required to monitor and address potential hazards.

Vision

An easily accessible and well promoted network of productive woodlands around Inverness that provide an attractive environment for recreation, education, health and wellbeing, and that can be used by a wide variety of local people and visitors.

Strategic Objectives for Inverness Woodlands based on IRS Strategic plan 2014-2017

Treasured:

- The woodlands around Inverness will be promoted as a key asset for the city and its people; considered as easily accessible, have outstanding views, and as attractive venues for events.
- Take a pro-active approach in connecting and linking the people of Inverness with their surrounding woodlands and the significant historical context.
- Maintain and improve the prominent scenic aspects of the wooded hillsides that can be seen from many parts of the city and its approaches.
- Maintain and improve the internal design of the woodlands to provide views towards the city and the sea by identifying a series of significant "visitor zone" designations.

Healthy:

- Reduce risk to people and the environment through sustainable forest management, whilst building resilience for a changing climate.

Productive:

- Optimise the productive potential of the existing forest and develop native timber production over the long term.
- Take a more pro-active approach in commercial and recreational thinning activities to ensure a continuous forested landscape for the future, especially in visually prominent areas.
- Avoid large scale, clear-fell-based forest management in popular recreational areas (e.g. west of the railway line in Culloden woodlands) and respond swiftly to impacts of catastrophic wind blow or to other damaging agents.

Access:

- Working with partners, FLS will raise awareness of the forests around Inverness as an easy-to find, easy-to-access resource and potential events venue.

Cared for:

- Restoration and enhancement of the natural reserves within Inverness Woodlands.

Appendix 4 – The LMP brief details how this Plan contributes towards the commitments of the former IRS Forest District Strategic Plan.

Proposals for the future management of the forests in this Plan area are made in accordance with all current industry best practice guidelines and have been prepared following full consultation with the relevant agencies, community representatives and external stakeholders. Operations arising from the approval of this Plan will also comply with all current FLS guidance and any subsequent revisions published during the Plan's approval period.

1.0 Introduction

Strategic Policy

Inverness Woodlands LMP has been prepared in line with the UK Forestry Standard (2011), UKWAS guidelines (2012), the Scottish Forestry Strategy (2006, currently under review for 2019/20) and "The Role of Scotland's National Forest Estate and Strategic Directions (2013)" *hereafter referred to in this Plan as the National Strategic Directions*. The IRS Forest District Strategic Plan has been used to give local context to National Strategic Directions and inform the Plan brief. Forestry Commission Scotland's long term planning is aligned to Scottish Government's "Scotland Performs" objectives and the Scottish Government's Land Use Strategy.

Drawing on these key themes, the former Inverness, Ross & Skye Forest District (IRSFD) prepared a three year Strategic Plan in 2014 (amended 2017). This plan establishes links with the National Strategic Directions document and sets out the District vision, priorities and objectives under which FLS North Region's forest plans will now be prepared. The IRSFD Strategic Plan ensures that land management activities complement and enhance the local economic, social and ecological individuality of each land management area.
The national commitments and district-specific actions were used to develop the basis of this LMP and further details of this linkage are provided in **Appendix 4** – LMP Brief.

Appendix 6 – The Forest Planning Framework in Scotland gives context to the purpose and scope of this LMP. In compliance with UKFS, this is a strategic indicative plan intended to state the objectives of management and how sustainable forest management will be achieved by signposting the relevant guidance and best practice and spatially identifying management aspirations. This Plan also provides a means to communicate our proposals to the neighbouring communities and stakeholders and serves as an agreed statement of intent. In compliance with UKFS, the operational plans arising from LMP delivery will include specific implementation detail, such as:

- Potential hazards to workers and forest users;
- Operational detail specific to machine use;
- Safeguards and mitigation measures to protect the immediate site and, by association, the wider forest;
- Detail of post-operations planning including the treatment of any waste materials identified;
- Contingency planning.

Appendix 7 – Key Policies and Guidance details the external policy drivers for the proposals in this Plan. Current industry and FLS guidance will be complied with in all operations associated with the delivery of this Plan, including where subsequent guidance revisions come into effect during the Plan's ten-year approval period.

Table 1 below outlines the aims and objectives for Inverness Woodlands LMP and how we will monitor progress against these targets.

Aim	Objective	Monitoring
Manage the forest sympathetically to the landscape and improve the visitor experience.	• Implementation of the LMP felling & restocking proposals, designed in liaison with the FCS landscape architect	• Implementation of the felling and future habitat and species proposals will be reviewed annually through the delivery of the harvesting and restocking programme and formally at year five & ten.
	• Maintain the level of access to the forest for the public	• Maintaining levels of access during forest operations will be monitored through the district work plan process, and on-site management and 75% site visits.
	• Maintain promoted waymarked trails and the gravel road network	• Maintaining promoted waymarked trails and the gravel road network will be monitored through the district work plan process, site management and 75% site visits.
	• Carry out a variety of thinning operations for recreational, commercial and environmental purposes in coupes and along trails across the whole block to improve visitor experience, views and woodland structure;	• Thinning activities will be monitored through the district work plan process, site management and 75% site visits. • Visitor experience monitoring will include visitor surveys to measure progress.
	• Remove redundant internal fencing	• Opportunities for deer fencing removal will be identified during the work plan process and at 75% harvesting visits.
	• Trees and scrub will be removed from the ramparts and from within the scheduled area of the fort site at Ord Hill so that the fort can be better appreciated as a whole in a setting similar to that at Craig Phadraig.	• Thinning activities will be monitored through the district work plan process, site management and 75% site visits. • Review of SAM plan
	• Where feasible, develop more open space for the most sensitive parts of the woodlands adjacent to battlefield so as to support an enhanced understanding of the topography and character of the battlefield landscape.	• Activities will be monitored through the district work plan process, site management and 75% site visits. • Review with Historic Environment Scotland at themed-point of the plan
Timber production, optimise the productive potential of the existing forest.	• Implementation of the LMP felling & restocking proposals, designed in liaison with the FCS landscape architect	• Implementation of the felling and future habitat and species proposals will be reviewed annually through the delivery of the harvesting and restocking programme and formally at year five & ten. • Commercial restocking will be undertaken to OGB4 standard and will have stocking density assessed at year one and five.
	• Undertake cost effective remedial works on any well stocked second rotation stands with productive potential, if the conditions are detrimental to growth, and the district decides to take action.	• This will be delivered by the operations team; all crops will be monitored for signs of nutrient deficiency up to canopy closure.

Reduce risk to people and the environment through sustainable forest management, whilst building resilience for a changing climate.	• Introduce suitable alternative conifer species where conditions allow to diversify stand composition.	• Implementation of the felling and future habitat and species proposals will be reviewed annually through the delivery of the harvesting and restocking programme and formally at years five & ten.
	• Protect the integrity of all watercourses & private water supplies during management operations and into the long term.	• Requirement for protection of watercourses and water supplies is a prerequisite of the forest and water guidelines. Special measures will be identified through the work plan process and it will be monitored through good site management and 75% site visits.
	• Continue to diversify the age structure of the forest through phased felling and re-establishment.	• Implementation of the felling and future habitat and species proposals will be reviewed annually through the delivery of the harvesting and restocking programme and formally at years five & ten.
	• Enhance the biodiversity of the forest and open habitats by supporting the colonisation of under-represented & absent native species.	• Monitoring for the presence of black grouse and natural regeneration of juniper will be undertaken. • Implementation of the future habitat and species proposals, which includes enrichment planting with aspen, sessile oak, and hazel, will be reviewed annually through the establishment programme and formally at years five and ten.
Manage the forest and open habitat in a manner that positively contributes to the ecological condition of the River Nairn.	• Within the period of the plan, re-establish riparian woodlands to reduce bank erosion, establish suitable levels of shade and enhance nutritional input into the aquatic ecosystem.	• Implementation of the felling and future habitat and species proposals will be reviewed annually through the delivery of the harvesting and restocking programme and formally at years five & ten.
	• Seek opportunities to work in partnership with organisations such as local Fisheries Trust and the University of the Highlands and Islands on research projects associated with burns and rivers.	• This will be an ongoing process principally lead by the local Environment team. Progress against this will be formally reviewed at years five and ten.
Restoration of native broadleaf woodland and open habitat in Inverness Woodlands over the next fifty years.	• Establishment of riparian woodland along the burns in Culloden Woodlands. Replacing conifers with broadleaves and restoration of any viable native broadleaf woodland throughout the wider forest.	• Implementation of the future habitat and species proposals will be reviewed annually through the establishment programme and natural regeneration monitoring programme and formally at years five and ten.
	• Maintain deer numbers within the forest that are conducive to establishing natural regeneration & restocking of Scots pine and native broadleaves.	• Deer counting will be undertaken to determine population numbers, assess impact on establishing trees and open habitat; this information in turn will be used to inform cull targets. • Regeneration zones will be monitored routinely to record deer impact on regeneration.
	• Eradicate rhododendron from the wider forest and control spread adjacent to seed sources. Look for opportunities to work with neighbouring land owners to achieve a holistic solution.	• A watching brief will be maintained to identify the presence of rhododendron throughout the forest, and inform consequent control work.
Provide opportunities for sustainable rural development through renewables projects and wood fuel production.	• Explore opportunities to develop and support the local wood fuel market through the sale of small round wood.	• This will be an ongoing process principally lead by the local Operations team. Progress against this will be formally reviewed at years five and ten.
Promote access for public health benefits.	• Continue to seek opportunities to work with health providers or support groups on specific projects that address public health issues.	• There will be an ongoing partnership between the North Region and NHS Mid Ross Community Health Service to offer "Branching Out" activities in parts of Inverness Woods (Craig Phadraig).

2.0 Background Information

2.1 The forests

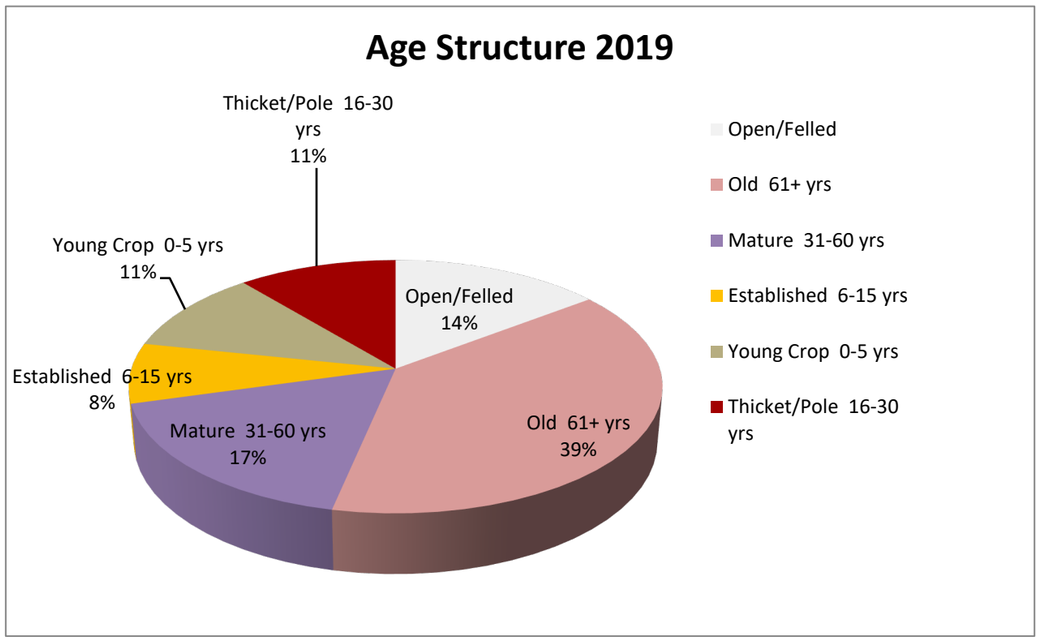
Inverness Woodlands Land Management Plan (LMP) is an amalgamation of **Culloden Woodlands, Ord Hill, Craig Phadraig** and **Daviot**. Inverness Woodlands stretch from the Black Isle in the north to Daviot in the south, and from the western edge of the city of Inverness to Cawdor in the east. Inverness Woodlands cover an area of approximately 1,156 ha of largely mixed coniferous forest (see **Map 1 - Location**).

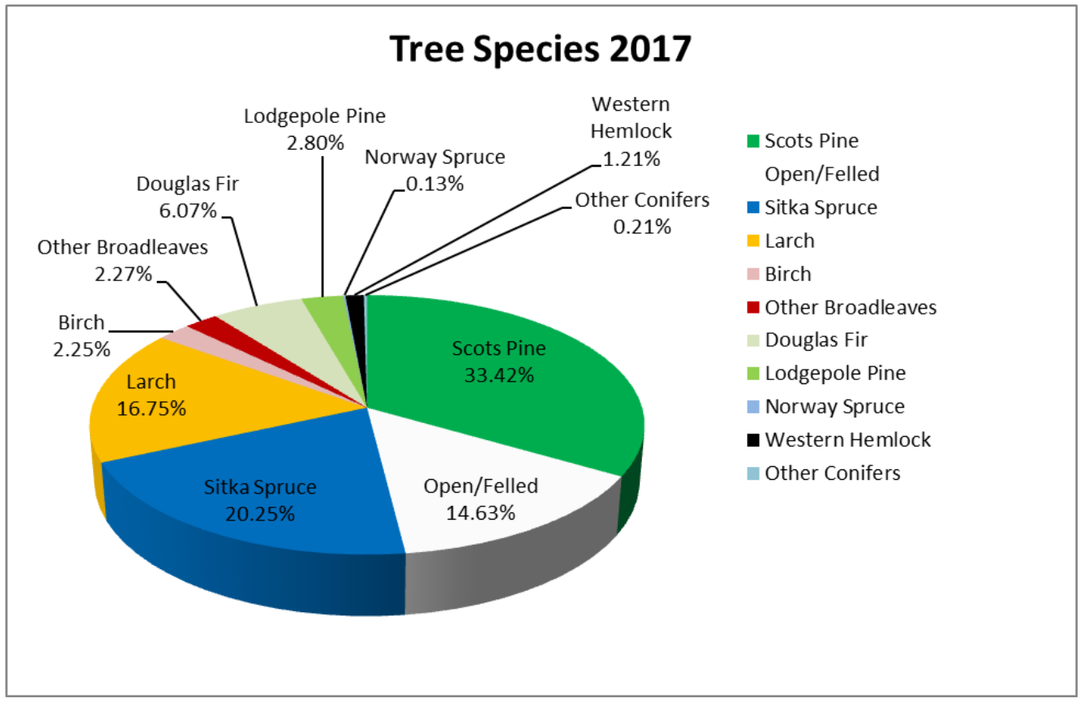
All four blocks of Inverness Woodlands have a long history of woodland cover.

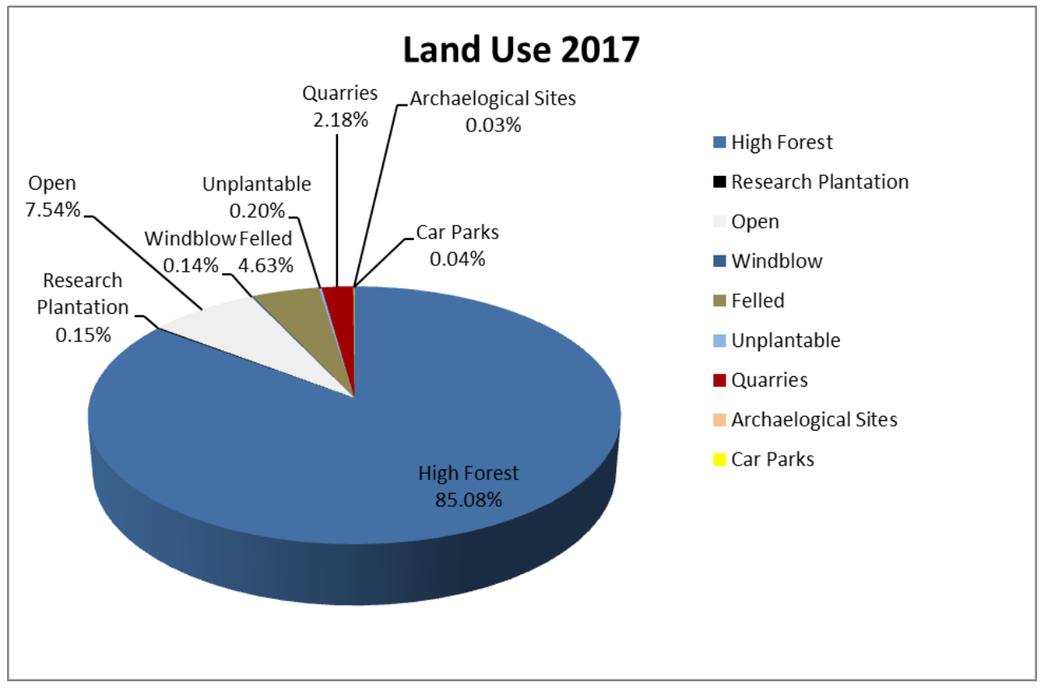
Commercial conifer species have dominated in various mixes over the last sixty years in the planning area, but the last ten years have seen a moderate increase in broadleaved species.

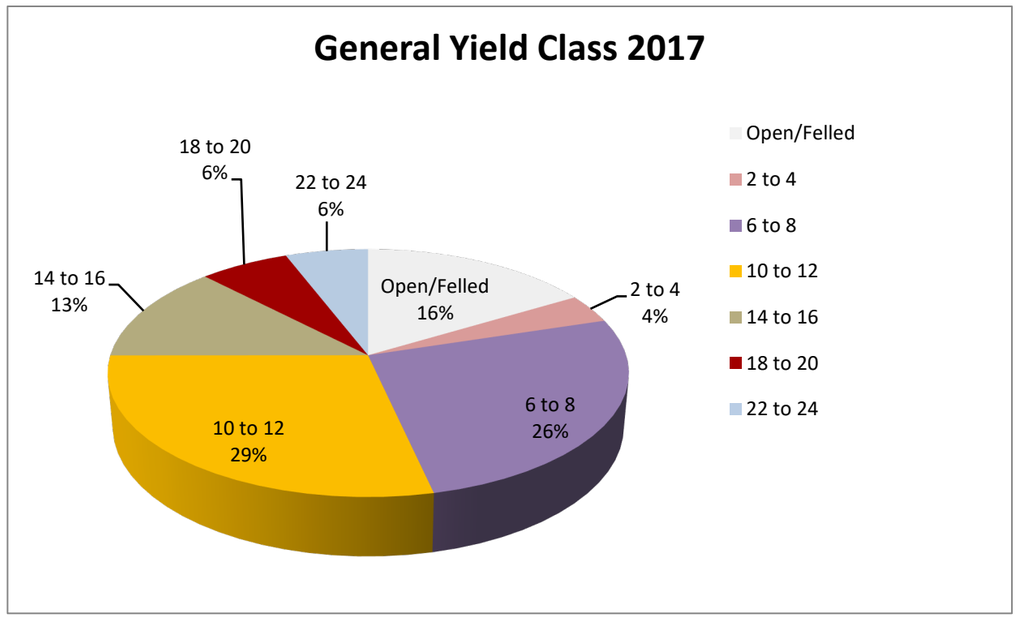
A review of the previous Forest Design Plan is contained in **Appendix 5.**

The following pie charts illustrate the current growing stock:









2.2 Open habitat

Approximately 85 ha of the plan area (around 7.5 %) is has been labelled "Open". There are no lowland and upland open ground habitats of European importance (as listed within the UK BAP) in the plan area. Consequently, most of the open areas either have a commercial purpose (quarry in Daviot, approx. 25% of the total open area ground), or are small rides below 1 ha in and around young plantations or along roads / powerlines, but can serve as an important habitat or connectivity networks for wildlife.

2.3 Geology, soils & climate

Inverness Woodlands sit on sandstones which are recognised as being of medium to low nitrogen availability. The soil survey of Scotland (Macaulay Institute, 1982) describes the soils as part of the Kindeace and Kessock association with well drained soils being dominant and the soils of a stony and loamy texture. The soils are of a medium to low phosphorus content.
For a detailed depiction of the soils in the LMP area, see **Maps 7a and b: Soils**

Climate is important to foresters because it determines the means by which they can achieve their objectives of management. Three main climatic factors are currently considered. They are warmth (**Accumulated Temperature, AT**), wetness (**Moisture deficit, MD**) and windiness (**DAMS**).

The climate data for the plan area is obtained from the Ecological Site Classification model (ESC). It ranges from *Cool, Moist and Sheltered* along the lower slopes with the upper slopes being defined as *Cool – Wet and Moderately Exposed*.

AT is the accumulated total of the day-degrees above the growth threshold temperature of 5º, which provides a convenient measure of summer warmth. These forest blocks are 'AT5' placing them in the "cool" zone.

DAMS is the "Detailed Aspect Method of Scoring". This represents the amount of physically damaging wind that the forest stands experience in the year. The range of DAMS for these blocks is from 3 to 36 – Sheltered to Moderately Exposed.

MD is the Moisture Deficit for the area and reflects the balance between potential evaporation and rainfall and therefore emphasises the dryness of the growing season (rather than the wetness of the winter or whole year). These forest blocks are on the boundary of the "moist" and "wet" zones.

These results will be used to help assist in the choice of tree species for restocking in this FDP. Each tree species has tolerances of these and other factors and can therefore be used to identify species suitable for the site conditions.

2.4 Landscape

None of the plan area is within any designated scenic or special landscape area. Ord Hill and Craig Phadraig are very prominent in the landscape. The landscape character of the Inverness Woodlands is identified in SNH Inverness District Landscape Character Assessment (Richards, 1999). Culloden Woodlands is mainly part of the "Coastal Woodlands" area; the rest lies in the "Rolling Farmland and Woodland" area; as does Craig Phadraig. Ord Hill is within the "Forest Edge Farming" and the "Forested Farming" area. Daviot is in the "Flat Moorland Plateau with Woodland" landscape area. Key characteristics are described in the documents No 114 Inverness District Landscape Character Assessment and No 119 Ross and Cromarty Landscape Character Assessment.

2.5 Surrounding land use

The blocks are surrounded by a number of private estates and with –in places extensive- forest land holdings. Craig Phadraig and Culloden Woodlands border directly on residential areas of Inverness, which creates additional challenges. The rest border a mix of agriculture and scattered houses.

2.6 Community and Public Consultation

The City of Inverness is at the centre of the four woodland blocks. Ord Hill and Daviot are located immediately adjacent to the A9, and attracts visitors from a wider area. Craig Phadraig is usually used by local people, as is Culloden Woodlands whose blocks border conurbations of Culloden, Smithton and the rural settlements along the Culloden Road. The four blocks lie within 9 community council areas. This led to a different public consultation approach. Rather than holding public consultation sessions in the community council centres, the North Region organised public consultation events in locations with high visitor numbers, such as the East Gate Mall and two retail parks in the city. Additionally, we engaged with visitors and potential visitors to our woodlands with an online survey. Finally, the North Region corresponded with the community councils and statutory stakeholders in the consultation process. All comments and requests from the public are contained in **Appendix 1.1 – Consultation Record** and **1.2 - "Public Consultation Events and SurveyMonkey Results"**.

2.7 Renewable energy

At present (Jan 2019) there are no known renewables proposals within the LMP area.

Most recently FCS ran a residual renewable energy offer which closed in March 2014. This was to allow communities and the renewables industry an opportunity to identify and develop planning proposals for potential small scale renewable energy schemes on the National Forest Estate.

Potential implications on forest design and management, as a result of renewable energy developments, would be addressed with the respective developers and through planning application consultation and, where required, consequent amendments to the Land Management plan applied for in the conventional way.

3.0 Key Features

All of the prominent features within the forest, the surrounding land and its use are illustrated on **Map 2 - Key Features**.

3.1 River Nairn and Burns around Culloden Woodlands

Daviot forest block is in the catchment of the River Nairn, and many minor watercourses run through the forest into this river. Some of the Culloden Woodland burns drain into the "Rough Burn". Most of the water bodies within the plan, as detailed by the SEPA River Basin Management Plan information sheets, are of moderate ecological status. See also **Map 15 – Water.**

The forest plays a significant role in reducing water flow into these rivers and stabilising the river banks. The Water Framework Directive (2000/60/EC) sets out the provision for the protection of water as a resource and an ecosystem. This was adopted in Scotland through the Water Environment and Water Services (Scotland) Act 2003. In Scotland the delivery of the objectives within this legislation is delegated to the Scottish Environment Protection Agency (SEPA). The objective of this legislation is to deliver good water status through the implementation of river basin management plans.

Forestry plans have a role to play in meeting the objectives of WFD by ensuring that the forestry activities do not cause deterioration and, where appropriate, deliver improvements to the water environment. For example any new proposed planting, forest restructuring and felling should not lead to any deterioration of any water bodies in or adjacent to the forest plan area. All planting, felling and long term forest planning must comply with the Forest & Water Guidelines and "The Water Environment Controlled Activities Regulations 2011 (CAR)" with respect to appropriate buffer strips between the planting and water bodies.
See CAR a practical guide for further information.

Additionally, this plan also proposes riparian zone creation and management to protect and enhance the aquatic environment and subsequently the watercourses' ecological status. This is thought best achieved by maintaining open or partially wooded conditions. Where existing conifer crops provide dense shade, it is advocated that these should be cleared back from stream sides and replaced with predominantly broadleaved trees and shrubs.

3.2 Priority species

Forestry Commission Scotland has identified two priority species for conservation action - juniper and red squirrel – that are present throughout the forest area. Details of species present, or thought to be present, within the Inverness Woodlands are shown in the table below:

Species	Presence	Note
Juniper *Juniperus communis*	Present through the area and locally common in patches	Scottish biodiversity list species
Red Squirrel *Sciurus vulgaris*	Present throughout area.	Scottish biodiversity list species
Crested tit *Lophophanes cristatus*	Present in pinewood habitats.	Scottish biodiversity list species
Pine marten *Martes martes*	Present throughout coniferous forest.	UKBAP species and Scottish Biodiversity list species.
Pipistrelle *Pipistrellus pipistrellus*	No recorded sightings, but suitable habitat present in areas of standing deadwood and old bridges.	European Protected Species Habitat regulations
Soprano Pipistrelle *Pipistrellus pygmaeus*	No recorded sightings, but suitable habitat present in areas of standing deadwood and old bridges.	European Protected Species Habitat regulations
Water Vole *Arvicola amphibius*	Has been reported in the area	Scottish biodiversity list species
Brown Long-eared Bat *Plecotus auritus*	No recorded sightings, but suitable habitat present in areas of standing deadwood and old bridges.	European Protected Species Habitat regulations

Other species, breeding sites and vulnerable native habitat identified through pre-operational will be recorded and protected during forest operations.

3.3 Priority habitat

The National Forest Estate (NFE) in Scotland currently accounts for 28,707 ha of PAWS and in response to the SFS, Forestry Commission Scotland (FCS) has made commitments to restore over 85% of these, while continuing to protect other veteran trees, enhance and expand ancient woodland remnants.
There are no areas of PAWS woodland within the plan area.

3.4. Sites of Special Scientific Interest (SSSI)

There are no designated sites within the plan area, however the Moray Firth SAC is adjacent to Ord Hill woodland.

3.5 Heritage features

Our key priorities for archaeology and the historic environment are to undertake conservation management, condition monitoring and archaeological recording of significant historic assets; and to seek opportunities to work in partnership to help deliver *Our Place in Time*, the Historic Environment Policy for Scotland, related Scheduled Monuments Consent Policies *and Managing Change in the Historic Environment* Guidance Notes.

Significant historic environment features within the LMP area include three which have been legally recognised as being of national importance through their designation as scheduled monuments or being placed on the inventory of historic battlefields. Their national importance should be a factor when considering their long term management:

- The Iron Age hill fort of Craig Phadraig (NH 639 452), Scheduled Monument (2892);
- The Iron Age hill fort Ord Hill (NH 663 491), Scheduled Monument (2499); and
- The Battle of Culloden (NH 746 448), Inventory of Historic Battlefields (6)

Both hill forts are also significant features within the recreational framework, with access paths and interpretation panels that will be monitored and maintained on a regular basis. The fort site at Craig Phadraig is maintained as open ground, and at Ord Hill is currently maintained under continuous cover forestry.

A recent small scale excavation at the vitrified fort of Craig Phadraig was undertaken following significant storm damage, when uprooted fallen trees exposed the rampart walls under the grass-covered slopes. The enormous rampart measured 6.5m in width and may have stood – as perhaps only the stone base for something larger – over 4m in height. As with many hillforts, Craig Phadraig has seen many programmes of excavations, with interventions in the 18th, 19th and 20th centuries. But all of these were in the pre-radiocarbon dating era. The excavation was an opportunity to investigate and date this important site using modern techniques. It is clear that Craig Phadraig has a long history of use and re-use. It appears to have been built around the 4th to 3rd centuries BC. Parts of the fortifications are vitrified, and the results of the recent work suggest that this burning activity took place during this first phase of occupation. But the site was also re-used in the Pictish period, with an additional defensive ditch dug sometime before the early 5th to mid-6th centuries AD. After a period of likely abandonment, the fort was again reused in the medieval period, in the early 11th to 13th centuries AD.

The fort on Ord Hill is similarly a vitrified fort, set within the rocky uneven summit of the hill. While the walls are visible, they lie within mixed conifer woodland managed as continuous cover. It was originally constructed in a more open landscape than today and it and the surrounding area is likely to have remained free of significant tree cover until the late eighteenth century. After which there is

evidence[1] of previous woodland cover, both as natural woodland and woodland of plantation origin. The most purposeful reference to planting with the intention of enhancing the landscape is within the 1790 Statistical Account, where it states that *'This hill, which goes by the name of Ord-hill, belongs to Mr. Grant of Redcastle, who has already begin to plant it with firs and other forest trees, and which, when finished, will be an ornament to this and the neighbouring counties, as it lies on the coast opposite to Inverness, and is to be seen as far down as from the town of Elgin'*

Dun Davie Hillfort (NH 7188 3930)
This hillfort is located off FLS ground next to Daviot Forest between the forest and Daviot quarry. A small part of the scheduled area is on FLS land although this doesn't include any part of the fort. The site is difficult to access due to its location near to a working quarry.

3.6 Access & Recreation (see also **Map 14 - Recreation and Archaeology**)

Inverness Woodlands are a main focus for all kinds of recreational activities. This comprises mainly walking, running, horse riding and mountain biking. Most visitors to these woodlands take access under their responsible access rights. There are also a small number of formal, waymarked trails that are inspected and maintained by FLS. There are formal car parks servicing all four woodlands (at Daviot this is provided by the Highland Council).

It is planned to improve the visitor experience and promote the recreational opportunities and value of these woodlands. Future work will therefore focus on improvements to facilities such as car parks and trails, with sensitive management of the woodlands and promotion of the four blocks as attractive retreats for locals and people from further afield.

The Inverness Woods Visitor Experience Plan (**Appendix 18**) reviews existing provision for visitors and makes proposals for future management and interpretation in the four blocks in the LMP area.

3.7 Recreational Facilities

Core Paths

Under the Land Reform (Scotland) Act 2003, each local authority is required to draw up a 'Core Paths Plan'. This designates a system of paths sufficient for giving the public reasonable access throughout the area - a 'core paths' network. Core paths help and encourage people exercising their access rights. Core paths also help to promote the use of routes that exist harmoniously alongside land management operations. These routes are useful to walkers, cyclists, horse- riders and others, and may also include waterways in establishing sufficient network. It is likely that most core path networks will incorporate some existing paths and rights of way. Maps of the Core Path proposals can be viewed on the Highland Council Web Site.

FLS would endeavour to collaborate in this process where candidate core paths and community aspirational paths are located on FLS ground.

[1] www.hlamap.org.uk, https://maps.nls.uk/Extract from the Knockbain Old Statistical Account 1790 (Ross and Cromarty Heritage website - www.rossandcromarty.org)

4.0 Analysis and Concept

The analysis and concept map is a culmination of the analysis of the key features within the plan area, as identified on the **Map 2 – Key Features ,** and displayed spatially on the Analysis and Concept map (**Map 3**). The **Zoning Maps (3a to 3d)** further identify constraints and opportunities in more detail at an individual block level.

The analysis has been considered with a focus on delivering the North Region's commitments towards the six key themes of Scotland's National Forest Estate and strategic directions 2013 – 2016, and for fulfilling the Plan Brief.

The plan proposes woodland removal on specified soil types and, as this is associated with internal redesign of the woodland to meet environmental criteria, it does not fall within the scope of woodland removal policy guidance (Forestry Commission Scotland 2009).

It is neither the intention nor the purpose of this plan to visualise detailed prescriptions of species boundaries or internal open space. This is in line with CSM6 (February 2005) which states:

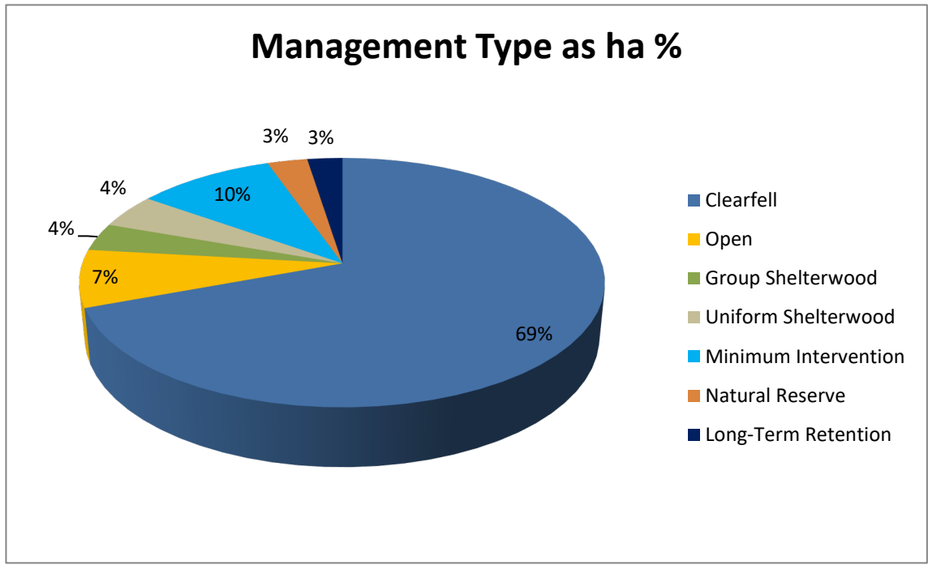
"In certain circumstances (e.g. poor soil map coverage, archaeological sites, where access to the forest is difficult) it is impractical to draw up detailed restock proposals with exact boundaries. In such circumstances, indicative restocking proposals may be produced subject to agreement between FC/FE. Detailed proposals would be finalised at the coupe planning stage".

5.0 Management Proposals

All of the management proposals are illustrated on **Map Series 4 (a, b, c,** and **d)**. The CSM6 **Map Series 10 (a, b, c,** and **d)** provides a simplified spatial reference to all felling and **Map Series 11 (a, b, c and d)** detail consequent establishment/restocking. For the ten-year Plan period, these activities are summarised in **Appendix 3: Summary of activities**.

Appendix 16 presents 3-D visualisations, showing future felling and restocking from selected viewpoints onto Ord Hill. There won't be any clearfelling in prominent parts of other woodlands within the plan area; subsequently, no visualisation for these woodlands was prepared.

The pie chart below illustrates the management regimes applied through the delivery of this LMP as a percentage of the whole area:



5.1 Clearfelling & Restructuring

As a result of past stand management, species composition, difficult terrain and varying degrees of exposure, clearfell will be the main silvicultural system applied in Inverness Woodlands. The main drivers for the felling over the period of the plan are; clearing windblown areas and areas along railway lines for safety purposes; restructuring of the prominent southern slope of Ord Hill; felling of mature timber based on their terminal height (Daviot; Culloden Muir east of the railway line); structural enhancement and improvement of visitor experience through visitor zone thinning.

Timber production from the plan area will consist of a wide variety of timber grades from a mixture of species. Maximising production will be balanced with the need to protect the soils and hydrology on sensitive sites.

The majority of the clearfelling will be carried out using harvester-forwarder systems; some small areas will require skidder-skyline systems due to the steep slopes.

Restocking in general will be subject to 3-5 year fallowing period post felling, to allow a natural reduction in *Hylobius* (pine weevil) populations thus minimising requirement for insecticide treatment.

To ensure a more diverse future forest structure, stands adjacent to felled areas will be retained until the restocking of the first coupe has reached a minimum height of 2m, except where there is a justified reason for doing otherwise (health and safety, plant health, wind blow or ecological). In such circumstances, restocking will be delayed - assuming no slope stability risk - to achieve required forest block age diversity.

5.2 Thinning and continuous cover systems

As referenced above (Section 5.1), clearfelling is the dominant silvicultural system to be applied. Where conventional thinning in stands is considered feasible and sustainable, these areas have been identified in an operational thinning coupe layer. **Map Series 6** shows the identified thinning coupes and the planned thinning year within the period of this plan.

An equally important silviculture system in the Inverness LMP area is Continuous Cover Forestry (CCF). Due to the extremely high recreation value of Craig Padraig, Culloden Woods and Ord Hill (Daviot will continue to be managed by clearfell mainly), trees in CCF areas will be retained for amenity purposes into the longer term, and renewed and transformed through smaller selective and group felling. Coupes that have been assessed as being suitable for CCF, including strip clearfell, are identified in the **Map Series 4** – **Management**. Management prescription records for these coupes are held at the Forest District Office.

5.3 Native woodland management **(Map 13 - Native Woodland Habitat Network)**

There are no designated Plantation on Ancient Woodland Sites (PAWS) areas within the LMP area. However, some sites have been identified as "Site Native Woodland" areas in the LMP plan area. These sites exhibit native-like character, which serves to help develop native woodland habitats networks across the LMP landscape, taking the surrounding woodlands into account. Future species scenarios for these sites include Native Broadleaves and Native Conifer species combinations.

5.4 Management of invasive species

Scattered populations of Rhododendron can be found in places across the LMP area. Existing sites have been controlled but surveys will identify any regrowth and need for further treatment.

5.5 Future species and habitats

Proposals for future species and habitats are graphically displayed on **Map Series 5 – Future Habitats and Species** (in combination with management proposals), using FLS legend symbols. Solid colours indicate re-planting with a pure species and stipple denotes replanting with mixtures. The **CSM6 Map Series 11** provides a simplified spatial reference to all establishment coupes within the ten-year period (in combination with 10-year felling proposals: **Map Series 10**).

The **Map Series 8** are also showing Future Tree Species and Habitats, using a broader, alternative grouping system of tree species.

The precise percentage of any species mixture will depend on soils and site conditions and will be decided by the Operational Forester (see **Appendix 10- Restock Species Prescriptions** and **Appendix 11 – Alternative Restock Prescriptions**).

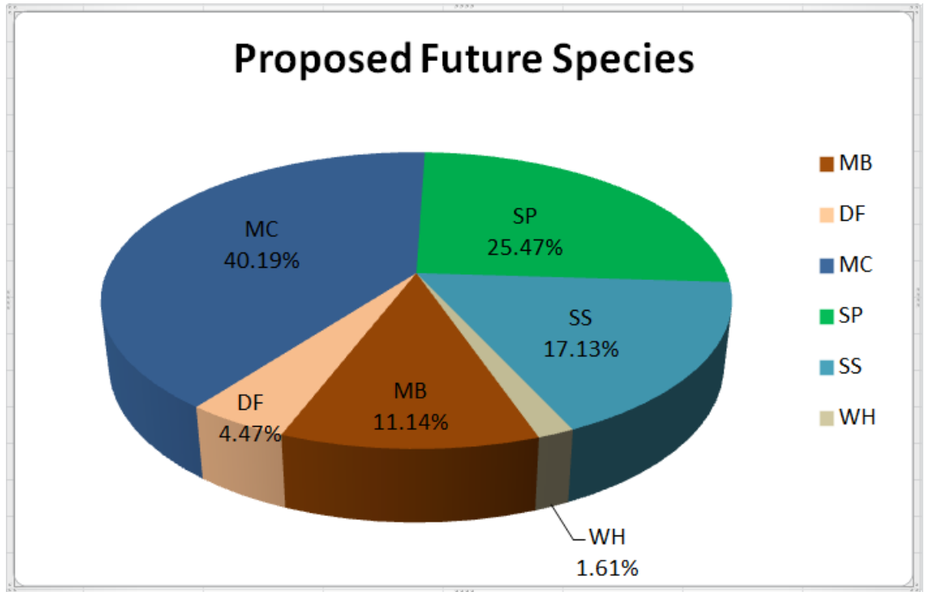
Shapes of re-planting coupes are indicative and may be altered subject to site and soil conditions. Depending on availability of plants and suitability to site conditions, other conifers could include Western Red Cedar, Lawson Cypress, Grand Fir and Noble Fir.

All planted broadleaves will be native and will include Rowan, Aspen, Birch, Alder and Cherry. All native broadleaves will be sourced from seed zone 201 or an immediately adjacent zone.

Due to plant health issues the following restrictions will be applied to restocking;

- *Phytophthora ramorum*: no planting of Larch species in the near future;
- *Dothistroma* needle blight: Lodge pole pine restricted to Alaskan provenance in silvicultural nurse mixtures.
- *Chalara fraxinea*: no planting of Ash.
- DED (Dutch Elm Disease): no planting of Elm

The above restrictions on species choice and planting will be continually reviewed throughout the plan period in accordance with development of Forestry Commission Plant Health guidance.



5.6 Future Management

There will be no major changes to the future management of Inverness Woodlands. Both clearfelling (with restocking) and CCF will continue to be applied as the two predominant management types. Several stands of older 1st rotation trees have been identified as being suitable for Long Term Retention (Daviot, Culloden, Craig Phadraig). Where intensive salvage of windblow and harvesting has occurred, some felling coupes have been postponed (Daviot) to maintain an element of mature wood on site in order to keep structural diversity.

5.7 Open habitat management

The Inverness woodlands do not lend themselves to natural open habitats on any significant scale. In this wooded landscape, open land will tend to succeed to wooded habitat even in the wetter patches. Save for open ground associated with powerline, road lines, right-of-way features and open water bodies, there are no open areas with any conservation value at present in the LMP area.

5.8 Management for BAP priority species & habitat

Management for priority habitat and species is illustrated below supported by this LMP

Species	Management activities	Action supported by the LMP
Juniper *Juniperus communis*	Protect existing populations from browsing. Increase presence through enrichment planting. Monitor for presence of phytophthora austrocedrae.	Juniper will be protected during operations and this coupled with deer management will allow juniper to increase in the future.
Pine marten *Martes martes*	Undertake pre-operational surveys for resting places and breeding sites. Protect during operations.	Long term aims to diversify woodland will provide continuity of habitat and benefit prey species.
Daubentons bat *Myotis daubentonii* Natterer's Bat *Myotis nattereri* Pipistrelle *Pipistrellus pipistrellus* Soprano Pipistrelle *Pipistrellus pygmaeus* Brown Long-eared Bat *Plecotus auritus*	Undertake pre operational surveys for resting places and breeding sites. Protect during operations. Retain veteran trees and standing deadwood where appropriate.	Retention of standing deadwood and the designation of natural reserve and minimal intervention will provide suitable habitat with low levels of human disturbance.
Red Squirrel	Undertake pre-operational surveys for resting places and breeding sites. Protect during operations. Any disturbance must be done under licence from SNH	The species will be monitored. Long term aims to dfiversify woodland will provide continuity of habitat
Raptors	Undertake pre operational surveys for breeding sites. Protect during operations	Long term aims to diversify woodland will provide continuity of habitat and benefit prey species.

SNH – Species Action Framework	**Objective**	**Actions supported by FDP**
Wildcat	Monitor for species. Presence/absence surveys during work plan assessments.	FDP provides good habitat opportunities if species is present.
Water vole	One record in plan area	Forest and water guidelines and pre-operational surveys will protect water voles and their habitats
Habitat Priorities	**Objective**	**Actions supported by FDP**
Caledonian pine forest	Create areas of native “type” woods	Retain old growth SP where possible.

5.9 Other Conservation Objectives

None.

5.10 Deadwood

A third of forest-dwelling species rely on dead or dying trees, logs, and branches for their survival (WWF, 2004). It is therefore of upmost importance for the conservation of biodiversity that there is ample provision of deadwood habitat through forest management. It is also acknowledged that enhancing deadwood provision is one the most cost effective ways to increase species richness on the National Forest Estate (Kortland, 2014)

The management of deadwood within the Land Management Plan area will be undertaken using the principles contained in the document Deadwood Management - Summary Guidance for FES (**Appendix 12**). Following aesk-based analysis, deadwood ecological potential (DEP) classes have been assigned to the LMP area and shown on **Map 9a** and **b -Deadwood Ecological Potential.**

The deadwood prescription for harvesting operations will be tailored to each site based on the areas DEP classification. This provides a flexible and more valuable way to meet the UKWAS target of 20m^3 per hectare over the total plan area.

5.11 Deer management

The Inverness Woodlands Deer Management plan is included as **Appendix 17.**

Wild deer on the National Forest Estate (NFE) are managed in accordance with the Scottish Government's strategy "Scotland's Wild Deer a National Approach" and under the auspices of the Code of Practice on Deer Management.

Forestry Commission Scotland's (FCS's) policy recognises that deer are capable of causing significant damage to forests and woodlands, mainly through browsing and bark stripping and can also adversely affect biodiversity through over-grazing of ground flora and the suppression of natural woodland regeneration. They are, however a natural component of woodland ecosystems, they can provide recreational sporting opportunities and venison as a high quality food. The presence of deer can also enhance the experience of visitors to the forest.

The deer population across the LMP area comprises roe (*Capreolus capreolus),* red (*Cervus elaphus)*, and Sika (*Cervus Nippon),* with roe being the predominant species. During the period of the plan the following deer management will be undertaken:

- Deer culling where appropriate to reduce the resident population to levels that allow natural regeneration of native woodlands and successful establishment of restock coupes.
- Population monitoring and deer impact assessment.

A copy of the document produced by Forest Enterprise Scotland; Deer Management on the National Forest Estate, Current Practice and Future Directions can also be accessed via link: Deer Management on the National Forest Estate

5.12 Recreation management

The current paths, tracks and gravel roads within the woods of Inverness provide a large network for informal recreation. We recognise their value to the health and wellbeing of a wide range of people, especially local residents.

Our priority is to maintain and improve our current facilities and to maximise their benefit for as wide a range of visitors as possible. Specifically, we will seek to maintain the existing car parks and waymarked paths. We will look for opportunities to improve the visitor experience following feedback from users during our public consultation events; for example reducing dog waste, providing more seating and maintaining viewpoints **(**see **Appendix 1.1** and **1.2; Map 14 – Recreation and Archaeology).**

We will follow best practice during tree felling and other forest operations. We will provide up to date information and offer diversions where- and whenever possible.

We will look for opportunities to better promote the recreation opportunities within these woods.

5.13 Community

To further strengthen links with the local community we have created the new role of Community Liaison Officer for each geographical beat within the district and will continue to support this function throughout the implementation of the plan.

The Community Liaison Officer will act as a consistent point of contact between the community and the North Region and will enable us to more effectively deal with any such requests or queries that may arise.

The North Region will continue to attend Community Council meetings, as and when necessary, and use this as forum to give advanced notice of forest operations that may impact the community. We will continue to work with interested community groups on the development of small scale renewable energy schemes on the National Forest Estate and local wood fuel initiatives.

5.14 Heritage management

Significant historic environment features (such as nationally important scheduled monuments, listed buildings, designed landscapes, historic battlefields and the most significant undesignated features) will be protected and managed following the UKFS *Forests and historic environment* guidelines (2011). Felling coupes, access roads and fence lines will be surveyed by Forest District staff prior to any work being undertaken in order to ensure that upstanding historic environment features can be marked and avoided. At planting and restocking, work prescriptions remove relevant historic environment features from ground disturbing operations and planting. Opportunities to enhance the setting of important sites are considered on a case-by-case basis (such as the views to and from a significant designated site). Details of all known historic environment features are held within the *Forester Web Heritage Data* and included within work plans for specific operations to ensure potential damage is avoided. Significant historic environment features will be depicted on all relevant operational maps and are shown on Map 14.

Significant historic environment features within the LMP area include three which have been legally recognised as being of national importance through their designation as scheduled monuments or being placed on the inventory of historic battlefields:

- The Iron Age hill fort of Craig Phadraig (NH 639 452), Scheduled Monument (2892);
- The Iron Age hill fort Ord Hill (NH 663 491), Scheduled Monument (2499); and
- The Battle of Culloden (NH 746 448), Inventory of Historic Battlefields (6)

Both hill forts are significant features within the recreational framework, with access paths and interpretation panels that will be monitored and maintained on a regular basis.
Craig Phadraig vitrified fort

The immediate fort site at Craig Phadraig is already maintained as open ground, surrounded by continuous cover forestry (CCF) Scots pine woodland. Management of the woodland at Craig Phadraig and Ord Hill takes into account not only the significant historic value of the fort sites, but also the biodiversity and recreation value of the diverse species and structure on both hills; the landscape significance of the well-defined, wooded 'twin' hills forming a dramatic gateway between the inner and outer Moray Firths, and to the setting of Inverness; and the wind throw risks (which are a risk for forest management and a potential hazard for visitors) involved when managing a continuous cover forest system.

In line with the SAM management plan the immediate fort site at Craig Phadraig will continue to be maintained as open ground. Scrub vegetation and saplings will be removed.

Ord Hill vitrified fort

On Ord Hill, the long term management will aim to gradually open up the fort and maintain it as open ground in order to ensure its long term preservation whilst maintaining secure safe access to the hill with continued management of the surrounding forest as CCF retaining a mixture of species to maintain the recent character of the wider landscape and removing trees where possible to open up the setting of the fort, as has been achieved on Craig Phadraig.

During the ten year life time of this plan, we will continue to manage the area surrounding both hillforts as Continuous Cover Forestry (CCF) of mixed conifer or native woodland. However, in addition, where considered safe to do so, trees and scrub will be removed from the ramparts and from within the scheduled area of the fort site at Ord Hill, so that the threat of trees and other vegetation within the monument is removed, so that the fort can be better appreciated as a whole and that the immediate setting is similar to that at Craig Phadraig. The confines of the fort will then be kept clear of any natural regeneration. The removal of trees from within the fort will allow us to investigate the feasibility of opening up views out of the forest from the fort and its ramparts. Views to the north east across the Black Isle are likely to be achievable.

In addition, FLS will explore the possibility of opening up a visual connection between the two forts through careful thinning, taking into account the wind throw risks. We will continue to discuss the details of this site's management with HES through the update of the SAM management plan.

Culloden Battlefield

Land management within the area of the Battle of Culloden will follow the guidance set out in HES *Managing Change in the Historic Environment Guidance Note: Battlefields* and *the Culloden Muir Conservation Area Management Plan*.

The management of land adjacent to the battlefield will carefully consider the impacts upon the battlefield. There are significant public benefits from retaining these areas as woodland including the biodiversity, recreation and landscape setting but specifically in this case to assist with drainage management and to continue with use of part of the woodland for "branching out" in partnership with NHS Scotland.

A long term aspiration is for the most sensitive parts of the woodlands adjacent to battlefield to include more open space where feasible, so as to support an enhanced understanding of the topography and character of the battlefield landscape.

Coupe 15050 to the west of the battlefield will continue to be managed as CCF with native species. At the mid-term review we will investigate opportunities to create and maintain open space free of natural regeneration immediately adjacent to the battlefield.

Coupe 15028 to the north of the battlefield Sitka Spruce will be felled in 2021 and natural regeneration will be encouraged favouring native broadleaves and Scots pine reducing the seed rain onto the battlefield. Again, we will investigate opportunities to create and maintain open space immediately adjacent to the battlefield.

FLS will review progress of this work on the SAMS and in coupes 15050 and 15028 with HES at the 5 year plan review.

Dun Davie Hill fort

Located partly on FLS land at Daviot, we will ensure that the scheduled area is kept clear of trees and maintained as open ground.

5.15 Infrastructure

All forest roads will be constructed to meet the specification detailed in the '*Timber Transport Forum design and use of the structural pavement of unsealed roads*'(TTF guidance) and to UKFS standard. Under the Environmental impact assessment regulations, an EIA determination covering proposed forest road construction is conventionally applied for.

During the plan period two new roads are to be constructed although a number of existing roads will require upgrading. For more details see **Map Series 4: Management.**

5.16 Forest resilience and climate change

Over the last decade we have seen a dramatic rise in pests and diseases affecting UK forestry. In line with current FC guidance the following restrictions will apply to our management;

Table 7 – Tree diseases & restrictions on management

Disease	Action
Chalara fraxinea	No planting of ash species. Natural regeneration will be accepted where it occurs. Planted ash will not be removed.
Dutch Elm Disease (DED)	No planting of elm
Dothistroma needle blight	There are some known positive DNB infections in the Inverness Woodlands plan area, mainly in Daviot; the most infected areas have been included in harvesting proposals in this plan period. In the future only Alaskan provenance lodge pole pine will be planted in a nurse mixture with Sitka spruce.
Phytophthora ramorum	Not currently present in plan area. Annual surveys undertaken by FC. Larch has been specified in the Future Species Maps to maintain species diversity; however the current policy in FES is not to plant larch due to the risk of infection. Felling plans may require amendment to control any future outbreak. There is a small amount of larch in the plan area however it is scattered throughout the forest and in young trees. If these become infected they would be felled in line with the FES Larch Strategy 2018.
Pine Tree Lappet Moth (PTLM)	Not present in the plan area

ESC analysis of future climate scenarios predicts, under both low and high emission scenarios, a wetter and milder climate. The suitability of Sitka spruce across the forest will increase along with other oceanic species such as western hemlock and pacific silver fir. Climatic extremes are expected to increase so damage from wind blow and flooding could increase. To reduce the risk of windblow the felling sequence will be from the north east to the south west and on the whole wind firm boundaries will be utilized to demarcate felling coupes.

In order to promote resilience against pests and diseases we aim to diversify our species composition at restocking; this will be undertaken where sheltered climatic and favourable soil conditions allow. Alternative species suited to the oceanic climate include Western red cedar, western hemlock, & Pacific silver fir. These will be planted in mixture to spread the risk if either species is affected by a pest or pathogen.