North Region

Inverness Woodlands Land Management Plan 2019 – 2029

Plan Ref:

Plan Approval Date:

Plan Expiry Date:

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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Summary

Inverness Woodlands Land Management Plan (LMP) is an amalgamation of **Culloden Woodlands, Ord Hill, Craig Phadraig and Daviot**. Inverness Woodlands now 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 approx. 1,156 ha of largely mixed coniferous forest. The plan period extends from 2019 to 2029 (s**ee Map1 Location** for the LMP Boundary).

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

- **Section 5: Management proposals**
- **Map 4 a, b, c and d (Map Series 4): Management / Future Habitat and Species**

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, restauration of ancient woodland sites, and a range of species and habitat surveys.

What's important in Inverness Woodlands?

- All woodlands are very important recreational facilities within the North Region. The proximity to the city of Inverness makes the forest accessible to a high number of visitors throughout the year. All of the forests except Daviot are classified as Woodlands In and Around Towns (WIAT), and play an important role in providing informal recreation opportunities for the city's population. It is highly likely that current housing development will mean that Daviot will soon meet WIAT criteria, although it has been managed as such in recent years.
- Ord Hill and Craig Phadraig form part of the backdrop to Inverness, being prominent from parts of the city and surrounding areas. As a result, the visual impact of felling operations on the prominent faces can be immediate and dramatic.
- Access to coupes is not sufficient in places; a few roads need to be upgraded.
- Riparian management of the River Nairn (Salmon fishing and conservation interest) in relation to Daviot.
- Maintain the partnership between the North Region and NHS Mid Ross Community Health, called "Branching Out", in Craig Phadraig. This program offers ecotherapy for people experiencing mental health problems. Activities include bushcraft, wood working and cooking. This woodland is also used informally by patients from the nearby New Craigs Psychiatric hospital during their residency.
- Inverness Woodlands are important resources for schools and other educational groups, such as the local orienteering group who use Ord Hill and the newly-built pet-free zone in Culloden providing school groups and families with a space for outdoor learning. Additionally, FCS have close links with the Scottish School of Forestry, and will continue to liaise with them regarding use of Culloden Woodlands as an educational resource.
- Ord Hill Fort and Craig Phadraig Fort are two well-known and significant Iron Age hillforts that will continue to be managed in accordance with the Forest District Monument Management Plan.
- Culloden Wood sits within the Culloden Muir Conservation Area and the *Inventory of Historic Battlefields* area for the Battle of Culloden in 1746. Forest planning in this area has been undertaken with consideration to the Highland Council *Culloden Muir Conservation Area Management Plan.*
- There is a history of significant flooding in the residential areas downstream of the Culloden Forest. 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**)

- Where woodland is adjacent to residential properties, younger crop need to be thinned heavily along boundary to create a buffer between forest edge and residential areas; additionally, regular monitoring of mature trees along these woodland boundaries will be carried out to detect any hazard.

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 are widely used by local people and visitors.

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

Treasured:

- The forests around Inverness will be promoted as a key asset for the city and its people; forests considered to be easily accessible, have outstanding views, and to be a venue for events.
- Promote a proactive approach in connecting and linking the people with Inverness' surrounding woodlands
- Maintain and improve the scenic aspects of the wooded hillsides that are prominent from parts of the city and surrounding areas
- Maintain and improve the internal design of the woodlands to provide views to the city and the sea by recognising the importance of the "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 industrial forestry management principles to highly recreational areas, such as west of the railway line in Culloden Woodlands. Apply more social forestry management guidelines, but respond swiftly to impacts like catastrophic wind blow, or other damaging agents

Access:

- Working with partners we will raise awareness of the forests around Inverness as an easy-to find, easy-to-access asset and event venue.

Cared for:

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

Appendix 4 – The LMP brief details how this plan will contribute 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 FCS guidance and any subsequent revisions published during the plan approval period.

1.0 Introduction

Strategic policy

Inverness Woodlands Land Management plan 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)" *here after referred to in this plan as The National Strategic Directions*. The IRS Forest District Strategic Plan has been used to give local context to The National Strategic Directions and inform the plan brief. Forestry Commission Scotland's long term planning is aligned to Scottish Government Scotland Performs objectives and the Scottish Government Land Use Strategy.

Drawing on these key themes Inverness, the former Ross and Skye Forest District (IRSFD) prepared a three year Strategic Plan in 2014 (amended in 2107). This plan establishes links with the National Strategic Directions document and sets out the district vision, priorities and objectives under which the North Region forest plans will be prepared. The IRSFD Strategic Plan ensures that land management activities complement and enhance the local economic, social and ecological individuality of each design plan 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 Land Management plan. 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 against which
Appendix 7 indicates the levels of operational plans that sit below, and are informed by this LMP. In compliance with UKFS the operational plans 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 FC guidance will be complied to any operations associated with this plan, including any subsequent guidance revisions published 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, 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 75% harvesting visits.
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 increase stand structure	• 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.
	• 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 year five & ten.
	• Enhance the bio-diversity of the forest and open habitat by supporting the colonisation of underrepresented & 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 year 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 year 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 the burns and rivers.	• This will be an ongoing process principally lead by the local Environment team. Progress against this will be formally reviewed at year 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, birchwood and 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 year 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 control works.
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 year five and ten.
Promote access for health benefit	• Maintain seeking opportunities to work with health providers or support groups on specific projects to address 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 forest

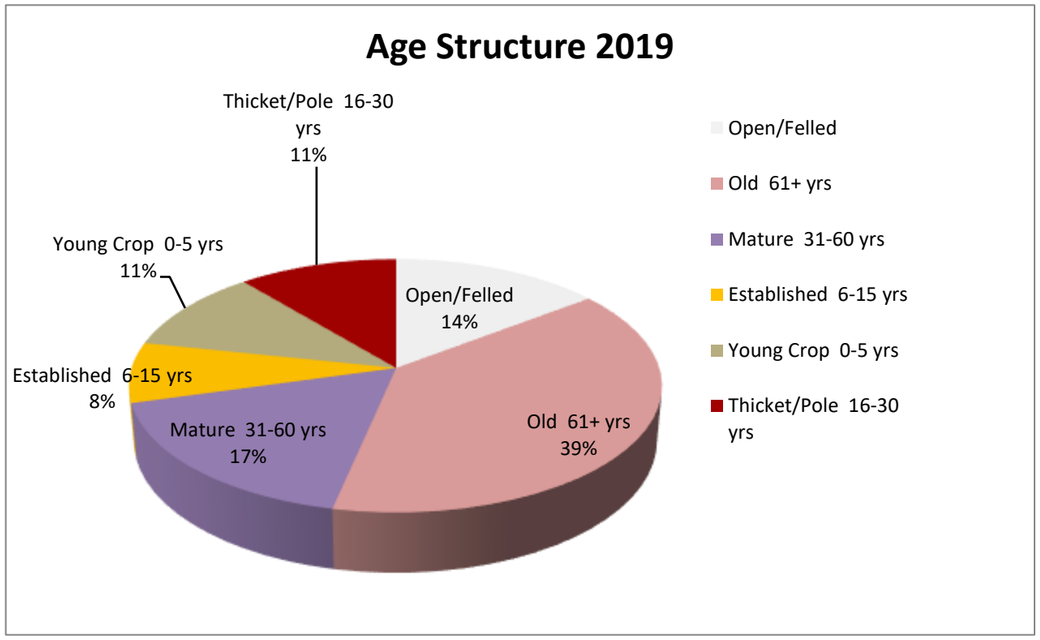
Inverness Woodlands Land Management Plan (LMP) is an amalgamation of **Culloden Woodlands, Ord Hill, Craig Phadraig and Daviot**. Inverness Woodlands now stretch from the Black Isle in the north to Daviot in the south, and from the Western edge of the city of Inverness to Cawdor in the east. Inverness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

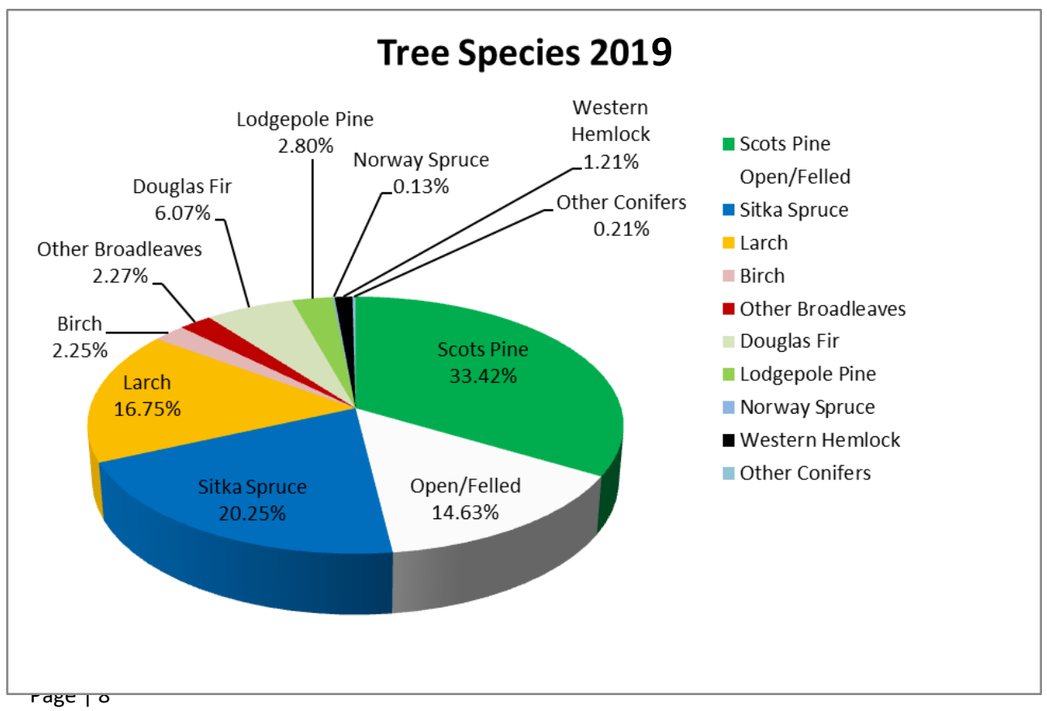
All four blocks of Inverness Woodlands have a long history of woodland cover.

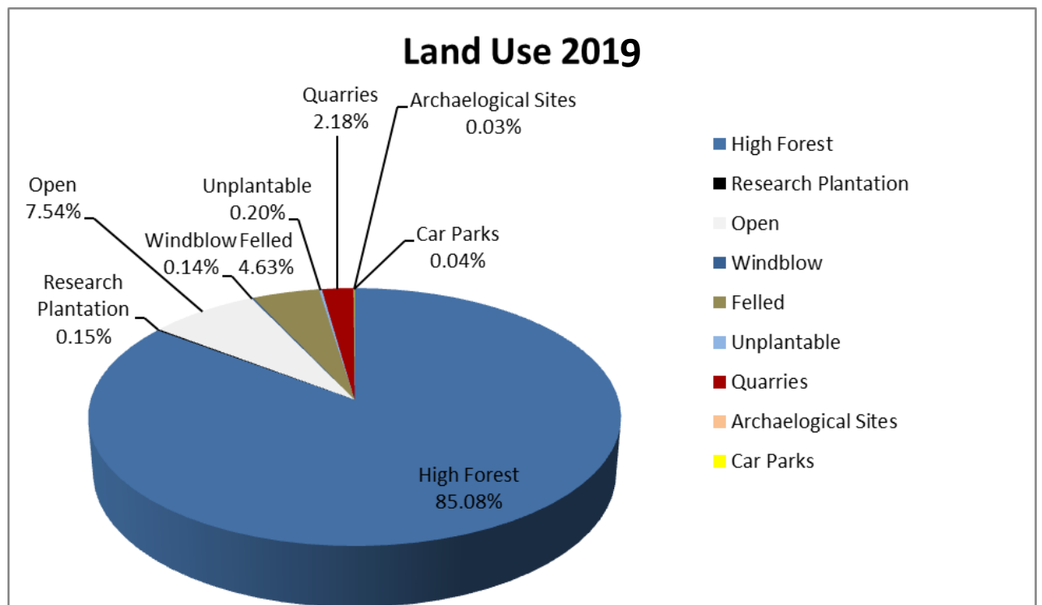
Commercial conifer species have dominated in various mixes over the last sixty years in the planning area, but the last ten years have seen a moderate increase in broadleaved species.

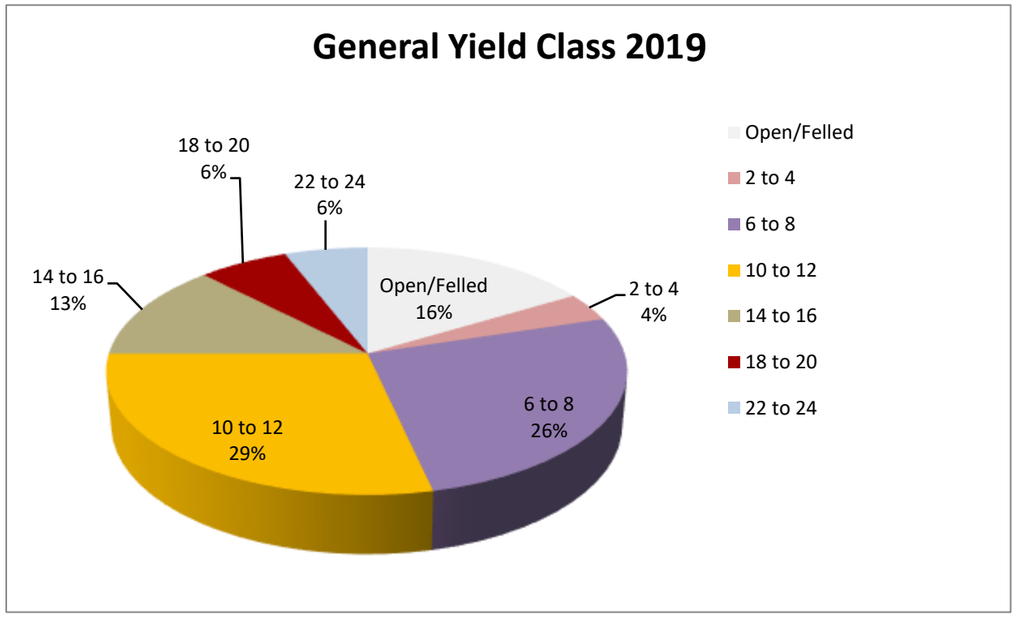
A review of the previous Forest Design Plan is contained in **Appendix 5.**

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, which serve as an important network for wildlife.

2.3 Geology, soils & climate

Inverness Woodlands sits 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 **Map 7: Soils**

Climate is important to foresters because it limits 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. For more details, see **Maps 10, 11 and 12**.

AT is the accumulated total of the day-degrees above the growth threshold temperature of 5º, which provides a convenient measure of summer warmth. The results for AT5 place these blocks in the "cool" zone.

DAMS is the "Detailed Aspect Method of Scoring". This represents the amount of physically damaging wind that forest stands experience in the year. The range of DAMS is from 3 to 36 and windiness is the most likely limiting factor to tree growth at higher elevations in Britain.

MD is the **Moisture Deficit** for the area. Moisture deficit 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 results place the blocks 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 for these and other factors and they can 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; so 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 is a mix of agriculture and scattered houses.

2.6 Community and Public Consultation

The City of Inverness is in the centre of the four woodland blocks. Ord Hill and Daviot are located immediately adjacent to the A9, which attracts visitors from a wider area. Craig Phadraig is usually used by local people, as well as Culloden Woodlands whose blocks border Culloden, Smithton and the rural areas 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 the two Retail TESCOs in the city. Additionally, we engaged with visitors and potential visitors to our woodlands **via a SurveyMonkey.** Finally, the North Region included 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.

FCS recently ran a residual renewable energy offer which closed in March 2014; this was to allow communities and the industry the 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, will be addressed through the respective developers planning application and where required amendments to the Land Management plan.

Further information on the development of renewable energy schemes is provided via the link below;

http://scotland.forestry.gov.uk/managing/work-on-scotlands-national-forest-estate/renewable-energy

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 these rivers. 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 Forestry & 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 below in table;

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 will be protected by survey and identification of breeding sites and protection of habitats 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 mandate, Forestry Commission Scotland (FCS) has made commitments to restore over 85% of these, while continuing to protect veterans, enhance and expand ancient woodland remnants.
There are no areas of PAWS woodland within the plan area.

3.4. Site of Special Scientific Interest (SSSI)

There are no designated sites within the plan area, but the Moray Firth SAC is adjacent.

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 *Scotland's Archaeology Strategy*.

Significant historic environment features within the LMP area include:

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

Both hillforts 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 is maintained in open ground, while Ord Hill is 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 reuse. 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 reused 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.

Land management within the area of the Battle of Culloden has been planned with consideration to the Culloden Muir Conservation Area Management Plan, which states that:

"Tree cover and forestry have had an important role to play in shaping land use and settlement patterns across the Conservation Area and are an integral part of its character, appearance and special interest. The woodland in the Conservation Area is principally commercial plantation, much

of which is very well established. Careful consideration will need to be given to manage the plantations, including exploring options to re-open historic views which positively contribute to the authenticity of the cultural landscape. Conversely, in areas where screening is considered to be beneficial to the setting of the Conservation Area, the woodland should be managed to ensure tree cover is maintained" (2015, p.20)

"A strategic approach to how the woodland is managed in the medium to long term is essential to ensuring that positive impacts on the character and appearance of the Conservation Area are maximised whilst negative impacts are kept to a minimum" (2015, p.29).

"Commercial forestry has both a positive and negative impact on the character, appearance and interpretation of the cultural landscape of the Conservation Area. The careful management of woodland – most especially commercial plantations – is essential to ensure the proper preservation of the area's character and value. Felling, thinning, woodland regeneration and new planting all require sensitive management. Over the next five years it is envisaged that detailed discussion with key stakeholders will result in a practical and achievable medium to long term forest plan for the commercial woodland in the Conservation Area. Overall, forestry has significant potential to make a valuable contribution to the future of the cultural landscape and is a key element in the future enhancement of the Conservation Area" (2015, p.30).

3.6 Access & Recreation (see also **Map 8 Recreation and Archaeology**)

Inverness Woodlands is a main target for all kinds of recreational activities. This is comprised in the main by walking, horse riding and mountain biking. Most visitors to these woodlands take access under their responsible access rights however there are also a small number of waymarked trails that are inspected and maintained by FES. There are formal car parks servicing all four woodlands (the Daviot one being provided by 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 the facilities like car park and trails, sensitive management of the woodlands and networking the four blocks into attractive retreats for locals and people from outside.

This Inverness Woods (see Appendix 18) Visitor Experience Plan reviews the existing provision for visitors and makes proposals for future management and interpretation in the four woodblocks 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 will designate a system of paths sufficient for giving the public reasonable access throughout the area - a 'core paths' network. Core paths will help and encourage people exercising their access rights. Core paths should also help to promote the use of routes designed to work harmoniously alongside land management operations. These routes will be 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.

Forestry Commission Scotland will collaborate in this process where candidate core paths and community aspirational paths are located on FCS ground.

4.0 Analysis and Concept

The analysis and concept map is a culmination of the analysis of the key features within the plan area, identified on the Key Features map **(Map 2)** and displayed spatially on the Analysis and Concept map (**Map 3**). The **Zoning Maps (3a, 3b, 3c and 3d)** further identify constraints and opportunities in more detail on 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 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:

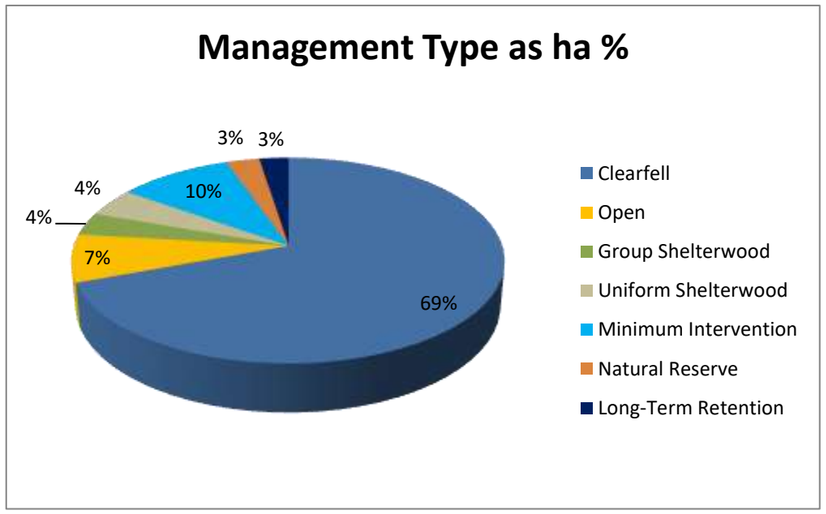
"In certain circumstances (e.g. poor soil map coverage, archaeological sites, where access to the forest is difficult) it is impractical to draw up detailed restock proposals with exact boundaries. In such circumstances, indicative restocking proposals may be produced subject to agreement between FC/FE. 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 5** provides a simplified spatial reference to all felling (in combination with establishment) within the ten year period and reference to **Appendix 3: Summary of activities**.

Appendix 16 presents 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 one of the silvicultural systems 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 fallow period post felling, to allow a natural reduction in Hylobius (Pine Weevil) populations and minimise 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 on sites with no slope stability risk, to achieve the required age diversity.

5.2 Thinning and continuous cover systems

As referred to above in section 5.1 "Clearfelling & Restructuring", clearfell is the dominant silvicultural system applied. Wherever conventional thinning in stands within the plan area has been 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.

Equally important as a 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 long-term, whilst the forest will be renewed and transformed; 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 **(see Map 13 Site Native Woodland)**

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 through the LMP plan area. These sites, although no PAWS areas per se, are areas of native-like status, which serve to help develop native woodland habitats networks in the LMP area landscapes, taking the surrounding woodlands into account. Future species scenarios for those sites would include Native Broadleaves and Native Conifers 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 4 "Future Species"** (in combination with the management proposals), using FES legend symbols; Solid colours indicate replanting with a pure species and stipple denotes replanting with mixtures. The **CSM6 Map Series 5** provide a simplified spatial reference to all the establishment coupes within the ten year period (in combination with 10-year felling).

The **Map Series 7** are also showing Future Tree Species and Habitats, using a broader, alternative grouping system of tree species.

The precise percentage of the 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**).

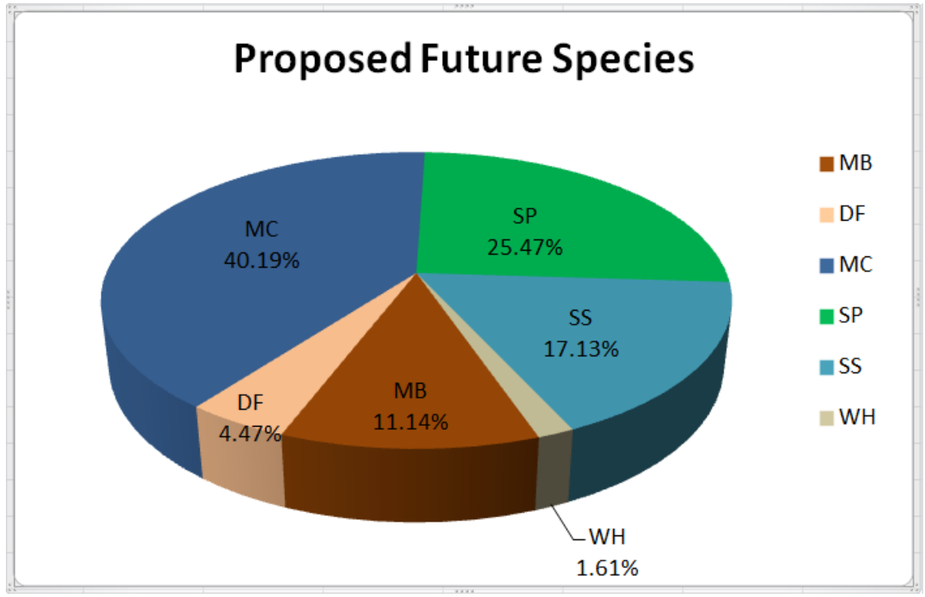
Shapes of replanting coupes are indicative and may be altered subject to site and soil conditions. Depending on availability of plants and suitability to site conditions, other conifers could include Western Red Cedar, Lawson Cypress, Grand Fir and Noble Fir.

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 the 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 the 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 felling/ restocking and CCF will continue to be applied as the two 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 scale. In this wooded landscape, open land will tend to default to a wooded habitat even on the wetter patches. Additional to the powerline, waterbodies and road-right-of-way features, there are no open areas with any conservation value 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	The species will be monitored. Long term aims to dfiversify woodland will provide continuity of habitat

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.
	must be done under licence from SNH	
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.

5.9 Other Conservation Objectives

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 bio-diversity that there is ample provision of deadwood habitat through our 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 (Kortland, 2014). Following a desk based analysis deadwood ecological potential (DEP) classes have been **assigned to the Land Management Plan area as shown on Map 9: 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 20m3 per hectare over the total plan area.

5.11 Deer management

The Inverness Woodlands Deer Management plan is included in **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 of roe (*Capreolus capreolus),* red (*Cervus elaphus)*, and sika (*Cervus Nippon),* 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 be accessed via the link below: 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 8 – 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 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 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). Appendix 19 The *Regional Historic Asset Management Plan* includes conservation management intentions for all of our designated historic assets. 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 damage is avoided. Significant historic environment features will be depicted on all relevant operational maps.

Significant historic environment features within the LMP area include:

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

Both hillforts 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 is maintained in open ground. Scrub vegetation and saplings will be removed. Ord Hill is maintained under continuous cover forestry. Forest operations within the area of the Battle of Culloden will be planned with consideration of the Culloden Muir Conservation Area Management Plan.

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 the UKFS standard. Under the Environmental impact assessment regulations an EIA determination covering the proposed forest road construction will have to be developed;
During the plan period no new roads need to be constructed. Quite a few existing roads need upgrading. **For more details see Map Series 5: CSM6**

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 scenario 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 wind firm boundaries will be followed between 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.