3.0 Background Description

3.1 Physical site factors

3.1.1 Geology Soils and landform

Easter Ross LMP area is situated on an underlying solid geology of Black Isle Sandstones and conglomerates characteristic of much of coastal Easter Ross and East Sutherland. The drift geology is a mix of glacial till derived diamictons and some localised alluvium near significant watercourses. The majority of the plan area is moderately fertile but this is inhibited by podzolisation and peat formation over a significant amount of area.

The implications of the underlying lithology on the establishment of second rotation crops are referred to further in section 3.3.2 Site Capapbility. The soils in this plan area are dominated by podzols, peaty podzols, peats and surface water gleys. Weathered peats and ranker complexes are also to be found, generally concentrated on managed open space at higher elevations. Rocky outcrops and screes are also present – most notably in the Scotsburn Forests. Upland brown earths and alluvial soils are found in limited areas on river terraces. Morrich More is planted entirely on a sand dune system.

The silvicultural prescriptions and assumptions made in this plan are largely specific to soil types referred to in the Forestry Commission soils classification system described in The Identification of Soils for Forest Management (Kennedy, 2002). Soils present in this plan area fall mainly into the following categories:

- Brown earths FC Group 1
- Podzols FC Group 3
- Ironpan soils FC Group 4
- Peaty surface water gleys FC Group 6
- Surface water gleys FC Group 7
- Molinia bogs (Flushed blanket bogs) FC Group 9
- Unflushed blanket bogs FC Group 11
- Rankers/skeletal soils FC Group 13
- Littoral soils FC Group 15

Detailed, reliable soil maps are currently being prepared to assist the Operations team in delivering the proposals detailed in this plan. James Hutton Institute soils data to 250k scale is available, but does not offer sufficient detail to predict the soils type for each coupe. The extent and nature of the soils can be identified where open ground exists, however as Pyatt & Brown 1982 state;

> *"Due to profound changes in the vegetation which take place after afforestation, which in many places involves it's complete suppression by the tree canopy, it is implicit that identification of site types cannot be…precise in the established forest".*

The implication for this plan is that exact species boundaries will only be defined once clearfell has allowed Forest Management staff to accurately identify soil types on a coupe by coupe basis. The correct prescription can then be matched appropriately to site type, ensuring best silvicultural practice.

3.1.2 Water

Scottish Environmental Protection Agency (SEPA) is implementing the Water Framework Directive (WFD) in Scotland which is a legal framework for the protection, improvement and sustainable use of all water bodies in the environment across Europe. All water bodies across Scotland have been assessed for ecological and chemical status and catchment plans have been drawn up to ensure water bodies are brought up to an acceptable level. NHFD lies entirely within the Scotland River Basin Management Plan Area.

The two aims of the Water Framework Directive (WFD) are to improve water bodies to good ecological status/potential by 2015 (or later if this is not feasible) and to prevent any deterioration in ecological status/potential. These objectives apply to baseline and non-baseline water bodies. Under WFD, as well as reaching good ecological status/potential, designated protected areas must meet the standards for which they are designated and have the same objective of no deterioration. Operations carried out on the National Forest Estate in North Highland Forest District adhere to the best practice detailed in the Forest and Water Guidelines (FCS, 2011), the Water Environment (Controlled Activities)(Scotland) Regulations (CAR) and the General Binding Rules published by SEPA to support the required ecological protection and improvement.

North Highland Forest District are aware that it is therefore important that the new proposed planting and forest restructuring, felling etc, including the proposed road construction, does not lead to any deterioration of the water bodies or water dependant areas within the forest plan area and any of the neighbouring water bodies. Appropriate establishment of riparian woodland to maintain buffer strips between commercial conifer plantations and water bodies is a key aim of this plan.

There are six water bodies which are currently not at good or better ecological status and have the potential to be affected by operations within this plan area:

These water bodies, water bodies noted on the SEPA RBMP website and minor watercourses identified by NHFD as significant are detailed in **Map 2 – Key Features Forests and Water**. The specific measures proposed to improve the status of the water bodies noted above is contained in the **Analysis & Concept Table** of this plan. Detail of the proposed riparian woodland that will provide a buffer on all identified watercourses (minimum 30 metres from each bank) is included in the **FDP Proposals** section of this plan and in **Appendix 5 – Management Prescription Zones** and **Appendix 11 – Habitat Management Prescriptions (NVC).**

Water body ID	Water body Name	Current classification
20142	Pollo Burn	Classification – Poor There are two impassable man-made barriers that appear to be related to Forestry Operations or on FCS land. The removal of these would work towards improving the classification of the water body.
20088	Easter Fearn Burn	Classification – Poor Due to fish barriers
20141	Balnagowan River	Classification – Moderate Due to fish barriers and morphology
20140	Garrick Burn	Classification – Moderate Due to morphology
20144	Rosskeen Burn	Classification – Moderate Due to morphology
100107	Loch Eye	Classification – Moderate Due to phosphorus

Easter Fearn Burn (20088) and Pollo Burn (20142) are noted by SEPA as 'under pressure due to phosphorous, although not the reason for the classification downgrade' and the source (whether agricultural or forestry related) is not recorded.

Wester Fearn Burn (20087), Easter Fearn Burn (20088), Craigrory Burn (20090) and Alness River (20156) all carry abstraction licenses and sedimentation must be avoided.

Loch Shelagh, Strathrory Photo G Findlay, NHFD

The watercourses in this plan area have suffered from inappropriate forestry practices in the past leading to pressure from plantations edges too close to watercourses, intensive cultivation and poorly implemented drainage. Given the widespread distribution of commercial forestry within the catchment, NHFD acknowledge that appropriate controls on forest operations are vital to improve the current position.

It is recognised that invasive non-native species (INNS) can have impacts on the condition of areas protected under the Habitats Directive for species or habitats important at a European scale and those nationally important for biodiversity. They are recognised as a significant risk to the water environment in the River Basin Management Plan for the Scotland River Basin district and in the North Highland area management plan.

Given the possibility of contamination from riparian INNS from upstream populations, any control efforts will always be undertaken with this in mind, and it is proposed that links will continue to be made with existing projects such as the biosecurity plans which are being produced by the Rivers and Fisheries Trusts Scotland. Invasive plants have not been recorded on the National Forest Estate within the plan area to date, however routine survey work will continue throughout the plan period and any occurance dealt with complying fully with best practice guidance. Work programmes are currently being delivered to reduce rhododendron (*Rhododendron ponticum*) and will continue during the coming plan period. American mink (*Neovison vison*) will continue to be the target of rigorous control.

Water crossings for proposed roads infrastructure will be planned and delivered in accordance with best practice and within the structure of the Controlled Activities Regulations (CAR). It is acknowledged that the storage of oil will be carried out in accordance with the Water Environment (Oil Storage) (Scotland) Regulations 2006.

As a minimum, The Water Environment (Diffuse Pollution) (Scotland) Regulations 2008 General Binding Rules will be followed. These rules cover the storage and application of fertiliser, cultivation of land, discharge of site water, construction of roads and use of pesticides. These are considered operational planning issues and as such mitigation and method are not detailed in this Forest Design Plan, however a robust system of recorded work planning and pre-commencement planning is in place and is available for view as required by stakeholders. Following site meetings with SEPA staff and agreement on consultation protocols reached in 2013, SEPA will nominate coupes which they feel are 'sensitive' during the standstill review of the draft plan, prior to it's submission to Highlands and Islands Conservancy. The workplans for these coupes will be annotated with a consultation request and during site planning, operations staff will contact SEPA staff and accommodate any specific operational requirements agreed for that coupe.

NHFD will contact SEPA prior to commencing engineering works in, or in the vicinity of, inland surface waters to determine the level of authorisation required. Site specific mitigation for engineering works is not a matter for this plan, however Forestry Civil Engineering will adhere to all planning protocols that apply at the time of construction.

However as a minimum, no land shall be cultivated within 2 metres of any surface water or wetland or 5 metres of any spring that supplies water for human consumption to encourage settlement of silt as the drainage waters flow over the open ground into watercourses.

Surface water drains will not discharge directly into the water environment and, where applicable, NHFD seek to address existing drains of this type to avoid siltation problems during and after forestry operations.

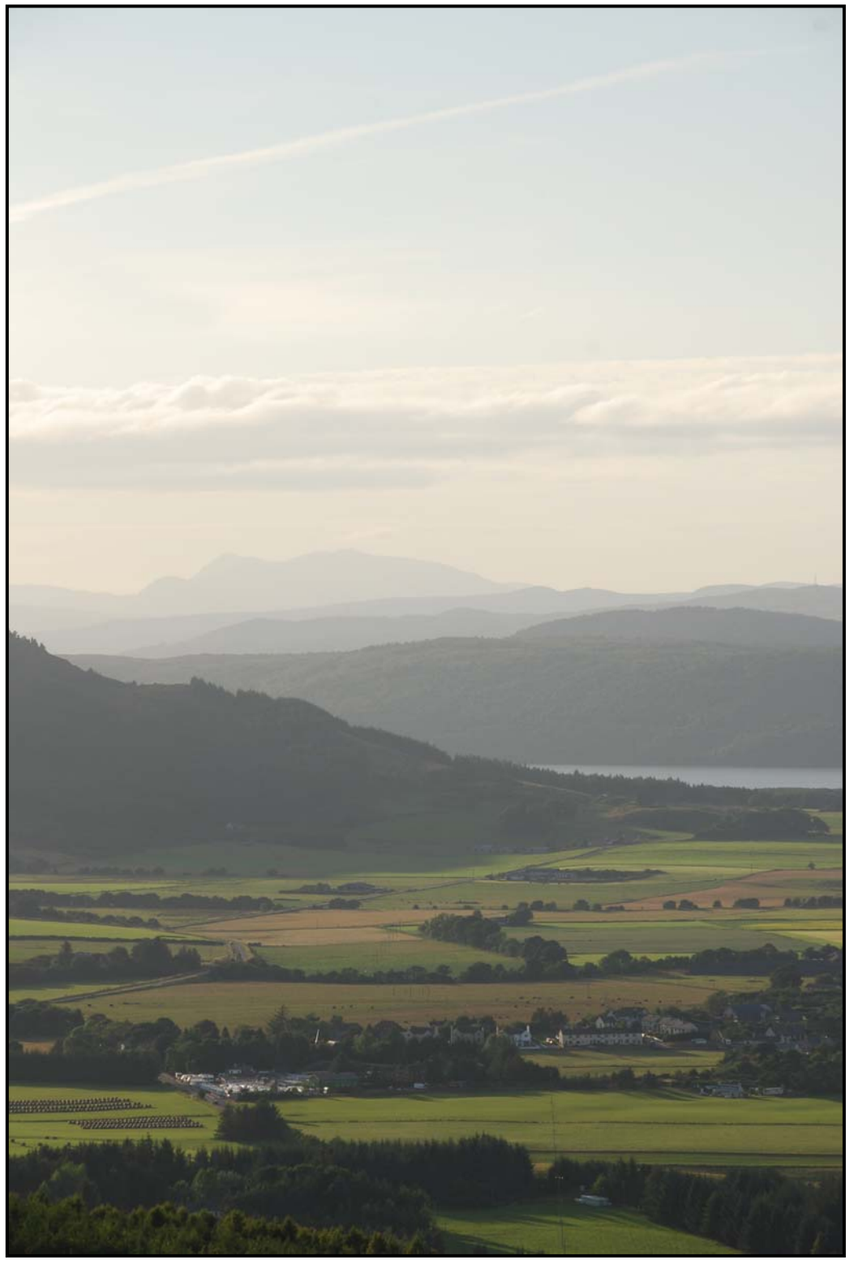
Across NHFD there is a high proportion of fragile soil (peats and glacial deposits) and combined with steep ground limitations this can present a risk to adjacent watercourses. Specific mitigation relating to steep ground working and/or soil conservation is identified at site planning level and proposals are then taken forward in line with UKFS guidelines, UKWAS requirements and industry best practice.

Where opportunities exist to deliver environmental improvement by the alteration or removal of inappropriately designed or redundant structures, for example, the upgrading of a culvert to allow fish passage or removal of a redundant weir, this will be undertaken by the Environment team. They will carry out consultation with the relevant stakeholders and will register the operation on the SEPA website. Opportunities for morphological and ecological improvements may also be considered. For example measures could include the re-meandering of artificially straightened watercourses. It is often the case that opportunities for wetland and peatland habitat restoration are only revealed after felling, when landform is clear and hydrology can be accurately assessed. Therefore site level proposals of this nature are agreed at work plan stage with the Open Habitat Ecologist and the FD Environment team.

Forestry has a significant role in mitigating the effects of climate change. Building resilience against extreme weather events underpins all our proposals but is particularly relevant in relation to protecting overhead powerline networks, public roads infrastructure and water courses. Previous cultivation and drainage operations across the National Forest Estate are inappropriate for current climate predictions and this will be addressed by the adoption of less intensive techniques in future.

Arisings from felling and thinning operations (lop and top) are not considered as waste in terms of this plan, because the material will be incorporated in the brash mat to aid machine traction and flotation thus protecting fragile soils. Additionally material will be retained on site to achieve deadwood objectives. Other branches and material left after harvesting contribute to the functional ecology of the woodland and are an important feature of nutrient recycling that will increase biodiversity and may assist future productive woodland establishment. Where the felling to recycle of non native species occurs the arisings have subsequent use including protecting vulnerable native tree regeneration from grazing mammals and again, contributing to the functional ecology of the woodland.

Where specific operations produce waste material not detailed above, the FD Environment or CRT staff will liaise directly with SEPA to establish the level of permission/licensing required on a site by site basis.



The Kyle of Sutherland and Dounie Forest from Morangie Forest: Photo G Findlay

3.1.3 Climate

Understanding that climate is a key factor in determining the correct choice of species is fundamental to interpreting the prescriptions given in this plan. Although prescriptions for native woodland – both riparian and across the wider forest are based on the National Vegetation Classification it's important to acknowledge that limitations on accuracy are created because NVC based prescriptions in guideline documents don't account for climate variances. In all circumstances the local Operations Forester will make a judgement on any potential effect of climate on the recommended woodland type and if appropriate adjust it to reflect site conditions.

When choosing the correct productive species for a site the climate guidance contained in Pyatt, Ray and Fletcher's Ecological Site Classification (2001) will be an essential determining factor for species or woodland type choice. The ESC uses measures of warmth, wetness, continentality and windiness to make species recommendations based on national statistics (calculated from Met Office data for the recording period 1961 – 1991). Local site factors including soil and vegetation are then combined with the national figures.

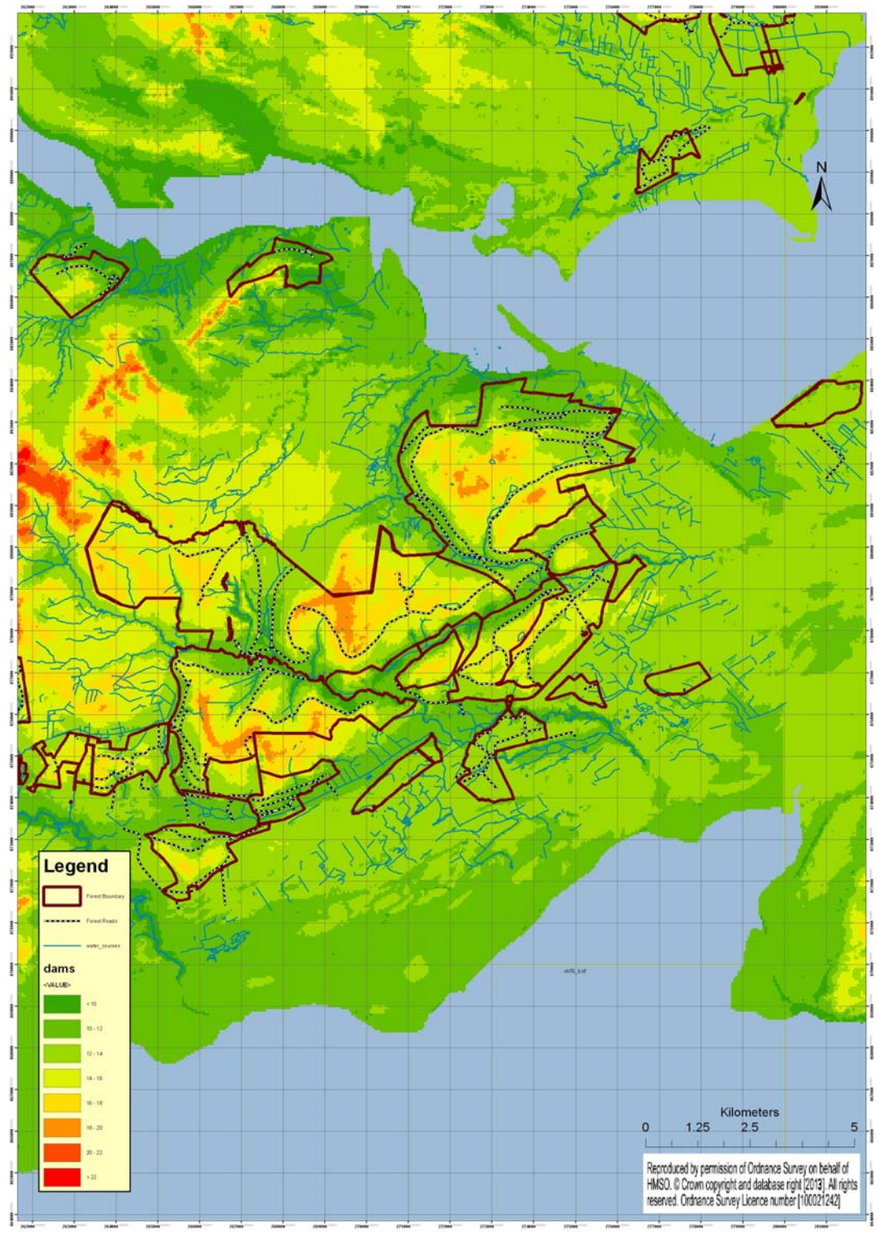
The detailed species proposals for restocking are made on a coupe by coupe basis, following a site visit by Planning, Environment and Operations staff, who use site assessment, climate data, soil nutrient regime and soil moisture regime datasets. Unfortunately due to only partial coverage of detailed soils maps, SNR and SMR cannot be visualised as a map for this plan.

Windiness is assessed using the Detailed Aspect Method of Scoring (DAMS) developed by Quine and White (1993, 1994) which analysed tatter flag data to produce models that would predict the speed and frequency of strong winds.

The climate for this plan area in common with much of the northern Highlands is predominantly 'cool-moist' moving to 'cool-wet' higher up the hill. There are very localised areas where the climate is 'warm-moist' due to shelter. As a result the forests in this plan area benefit from a potential growing season and local climate suitable for commercial forestry and the establishment of a good variety of native woodland types.

DAMS scores of between 8 and 14 which are very suitable for commercial forestry are common throughout. The majority of the plan area is suitable for commercial forestry and very limited areas are acceptable for adopting low – impact silvicultural systems (LISS) and longer rotations.

The map opposite shows the DAMS scores across the FDP area.



3.2 Biodiversity and Heritage Features

Designated Sites

Sites designated for conservation reasons within this plan area are as follows:

- Morrich More SSSI
- Dornoch Firth and Morrich More SAC
- Dornoch Firth and Loch Fleet SPA
- Dornoch Firth and Loch Fleet RAMSAR
- Morangie Forest SPA
- Struie Channels SSSI
- Kinrive – Strathrory SSSI
- Pitmaduthy Moss SSSI

Forestry Commission Scotland manages these sites under a system of Designated Site Plans. These DSPs have been reviewed as part of this Land Management Plan and the operations associated with them carry the approval of Scottish Natural Heritage. All DSPs are appended as supporting documents to this plan and carry full details of the sites noted above. The designated habitats and species within the plan area make these forests a very important area for biodiversity and future proposals will reflect the status of the Easter Ross Forests as a conservation site of European importance.

Additionally Morangie Forest is designated as a red squirrel stronghold (see supporting docs).

Planted Ancient Woodland Sites

The National Forest Estate (NFE) in Scotland currently accounts for 28,707 ha of Planted Ancient Woodland Sites (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, enhance and expand veterans and ancient woodland remnants.

The implications for management are that pre – operational surveys are geared to detecting relevant species and monitoring and operational data will subsequently be utilised to review the aims and objectives for each area of PAWS.

Using the PAWS restoration management flow chart in 'FES PAWS Guidance' (Thompson, 2009) will help determine which method of restoration management is best suited to the site-specific conditions of the PAWS.

Wider benefits to biodiversity created by non native species will also be balanced with the restoration potential to decide on future management approach.

The following distinct ancient woodland areas are recorded within the LMP area:

Site Name	Site Area (Ha)	OS Grid Ref	PAWS Type
Struie Wood	65.5	NH 632 865	2b LEPO
Edderton Woods	17.0	NH 637 869	2b LEPO
Dounie Wood	16.0	NH 679 870	2b LEPO
Logie Easter Wood	77.7	NH 779 773	2b LEPO
Marybank Wood	185.5	NH 759 762	2a ASNW
Tullich Wood	92.7	NH 732 743	2b LEPO
The Wilderness	65.6	NH 730755	2b LEPO
Rosskeen Wood	93.2	NH 710 744	2b LEPO
Newmore Woods	461.7	NH 674 732	2b LEPO
Cnoc Navie	203.1	NH 660 728	2b LEPO
Dalnacloich	4.1	NH 679 737	2a ASNW
Dalnacloich II	17.6	NH 689 745	2a ASNW
Cambuscurrie Wood	4.7	NH 733 838	2a ASNW
Bad na Circe Wood	27.7	NH 741 780	2a ASNW
Scotsburn Wood	502.5	NH 743 775	2b LEPO
Tarlogie Wood	172.1	NH 750 794	2b ASNW
Tarlogie Wood	30.0	NH 745 816	2a ASNW

The extent and locations of ancient woodland areas where restoration is proposed is detailed in **Map 2 – Key Features (Environment)**. All restoration to be undertaken on these sites will comply with current guidelines and best practice. These priority sites are also highlighted in yellow in the above table.

During the period of the last plan a detailed walkover survey was undertaken to determine the nature of each restoration site and at future planning meetings with operational staff this information will form the basis for decisions regarding appropriate species of trees and shrubs to be used during restocking operations.

Cultural Heritage

The Highland Historic Environment Record has been consulted during the preparation of this plan. Following *FES Historic Environment Planning Guidance*, this Land Management Plan describes and considers the historic environment relevant to the plan area.

Appendix 9 – Archaeology Record section of this plan includes details of all relevant scheduled monuments, listed buildings, designed landscapes and the most significant undesignated features. Important historic environment features are surveyed, recorded, mapped and monitored to ensure and demonstrate Forestry Commission Scotland compliance with the UK Forestry Standard and UKWAS.

In general, all significant archaeological sites are protected and managed following *Forestry & Archaeology Guidelines* (FC 2011), the FCS policy document *Scotland's Woodlands and the Historic Environment* (FCS 2008) and the supporting *FES Historic Environment Planning Guidelines* (available from the FCS Archaeologist). Management coupes, access roads and fence lines are 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 restocking, work prescriptions remove relevant historic environment features from ground disturbing operations and replanting. Opportunities to enhance the setting of important sites are considered on a case-by-case basis (such as the views to and from a designated site).

Any recent archaeological surveys that have been undertaken on behalf of FCS have been incorporated into our spatial GIS database - and any new archaeological surveys required (in unimproved upland areas for example, or areas within which the archaeological record is unusually rich) will be undertaken to the standards laid out in *FES Historic Environment Planning Guidelines.* This will ensure that undiscovered historic environment features are mapped and recorded prior to forestry establishment and management operations - and will ensure the continued comprehensive protection of the known archaeological resource.

All scheduled monuments on the NFE in North Highland Forest District are inspected on a five yearly cycle with Historic Scotland, prior to preparation of a dedicated management plan for each site. These plans give detailed prescriptions for the management of each individual monument. There are no scheduled monuments within this FDP area.

It is common when planning forest operations to discover new sites of archaeological interest. All sites are subject to rigorous pre-operations planning and inspection and staff will refer to the guidance of Ritchie and Wordsworth (2010) when completeing pre-operations surveys. Advice will be sought from the FCS archaeologist on the significance of new sites and Highland Council and Historic Scotland consulted as appropriate.

Bogrow Scheduled Ancient Monument Photo G Findlay NHFD

3.3 The existing forest

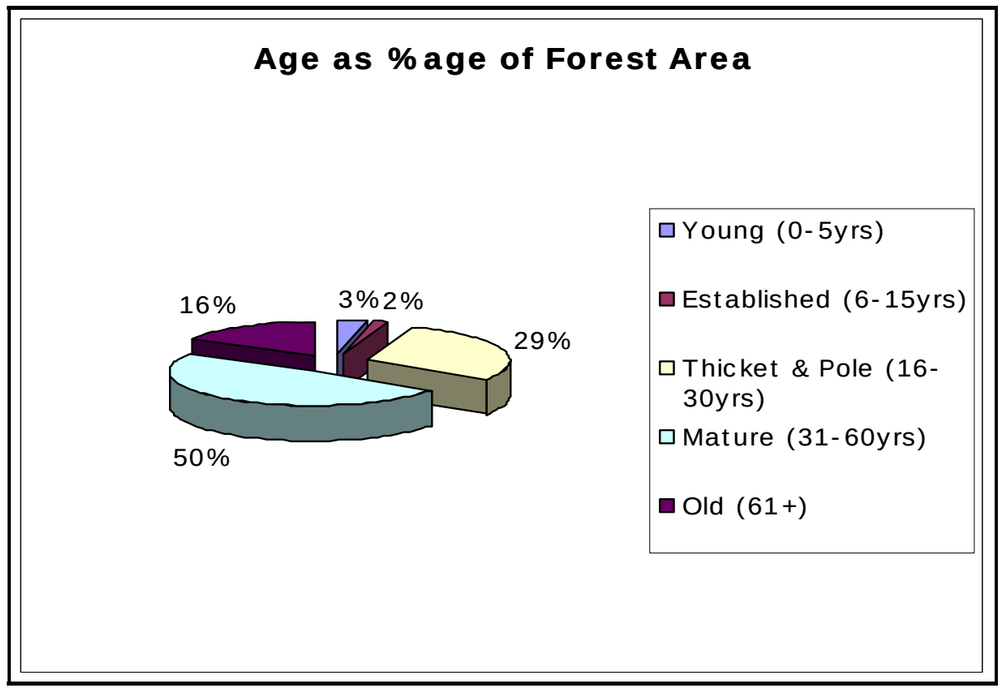
3.3.1 Age structure, species and yield class

Age Structure

The age structure of the forests within the Easter Ross LMP area is reasonably wide, however there is scope to provide much greater diversity within the five main age class structures. The consequence of windblow and forest health related production has been that LISS work has been postponed. This has meant that mature crops (50%) have had less restructuring than planned.-

Larger scale felling coupes will inevitably continue to occur as further DNB affected crops are cleared, however LISS programmes will now be implemented and this will allow full age class distribution across much larger areas of the forest. The prescribing of permanent native woodland and riparian woodland zones will also influence age class where veteran trees will develop over coming decades.

In addition, the 'young' age class is under-represented in the figures because the recording of established regeneration in LISS areas is currently incomplete while national guidelines for monitoring are agreed.

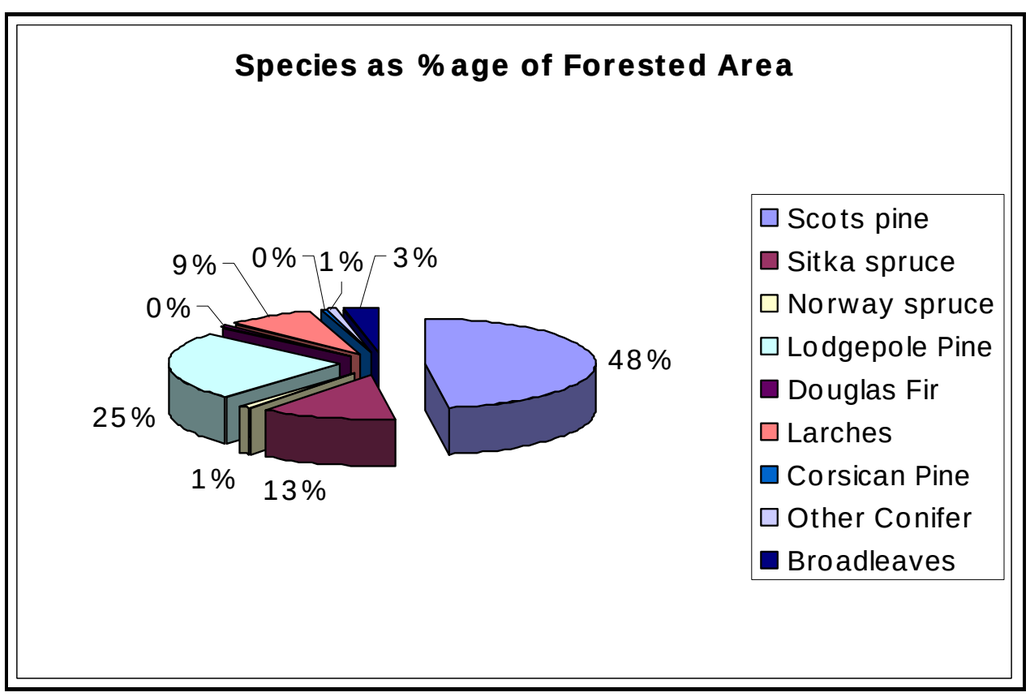


Species

The chart below illustrates the species range across the LMP area. Scots pine predominates due to soils types and past management objectives and decisions relating to capercaillie management. The species range outwith this is spread amongst a predictable range of commercial conifer crops – principally lodgepole pine and sitka spruce, with smaller proportions of larches and firs.

These firs and larches have been planted only where localised improvements in soils and climate were previously identified, however the species diversity does not truly reflect the site conditions and a much wider range of species could be reasonably expected to thrive including productive broadleaf woods in the most sheltered areas.

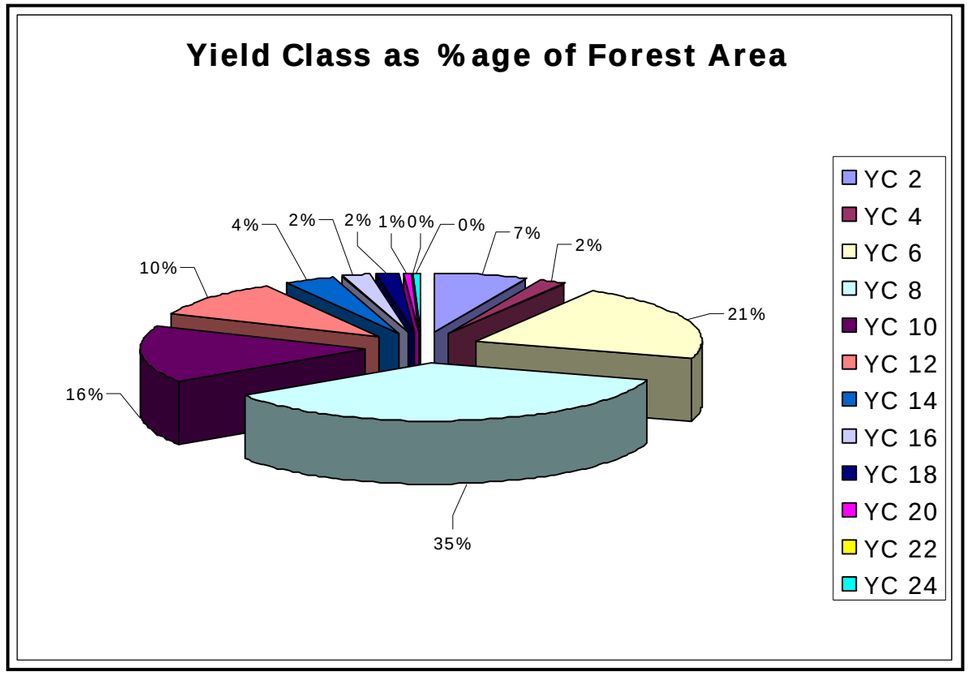
The broadleaf element is largely related to landscape driven native woodland planting throughout the forest and there is considerable scope for extension of this area, particularly on PAWS and in relation to the establishment of riparian native woodland intended to create extensive aeas of natural reserve and buffer water.

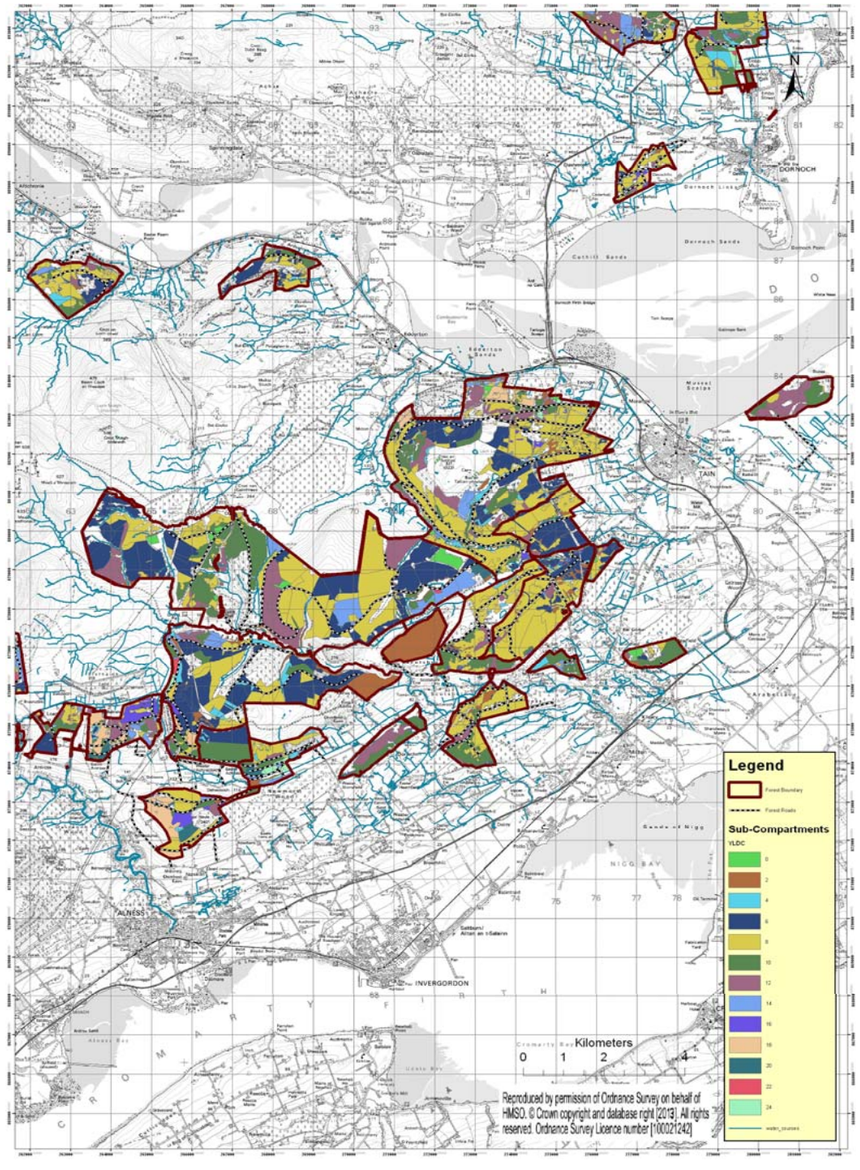


Yield Class

Yield classes found in the LMP area are typical for the species and site types encountered – approximately 65% of the forest area lies in the 8 – 14 range. It is anticipated that the yield class can be improved during the coming rotations by improved use of silviculture techniques and more appropriate site selection for species. The continued reliance on pure crops across much of the forest is probably impacting on yield and restocking proposals within this plan will seek to address this issue. The areas of LP where yield class falls between 6 – 8 are largely found on the upland slopes where soils are wet, exposure is relatively high and nutrient levels are challenging. These sites have undergone analysis to assess suitability for productive forestry and this has informed the future habitat proposals.

It is acknowledged that lower yield classes, particularly in SP and broadleaf crops, can lead to higher quality timber and it is important that silvicultural treatments are designed that will achieve this. The relevance of this is amplified by the significant areas of PAWS found across the LMP area and the multiple conservation objectives.





Yield Class Distribution Across the FDP Area

3.3.2 Site Capability

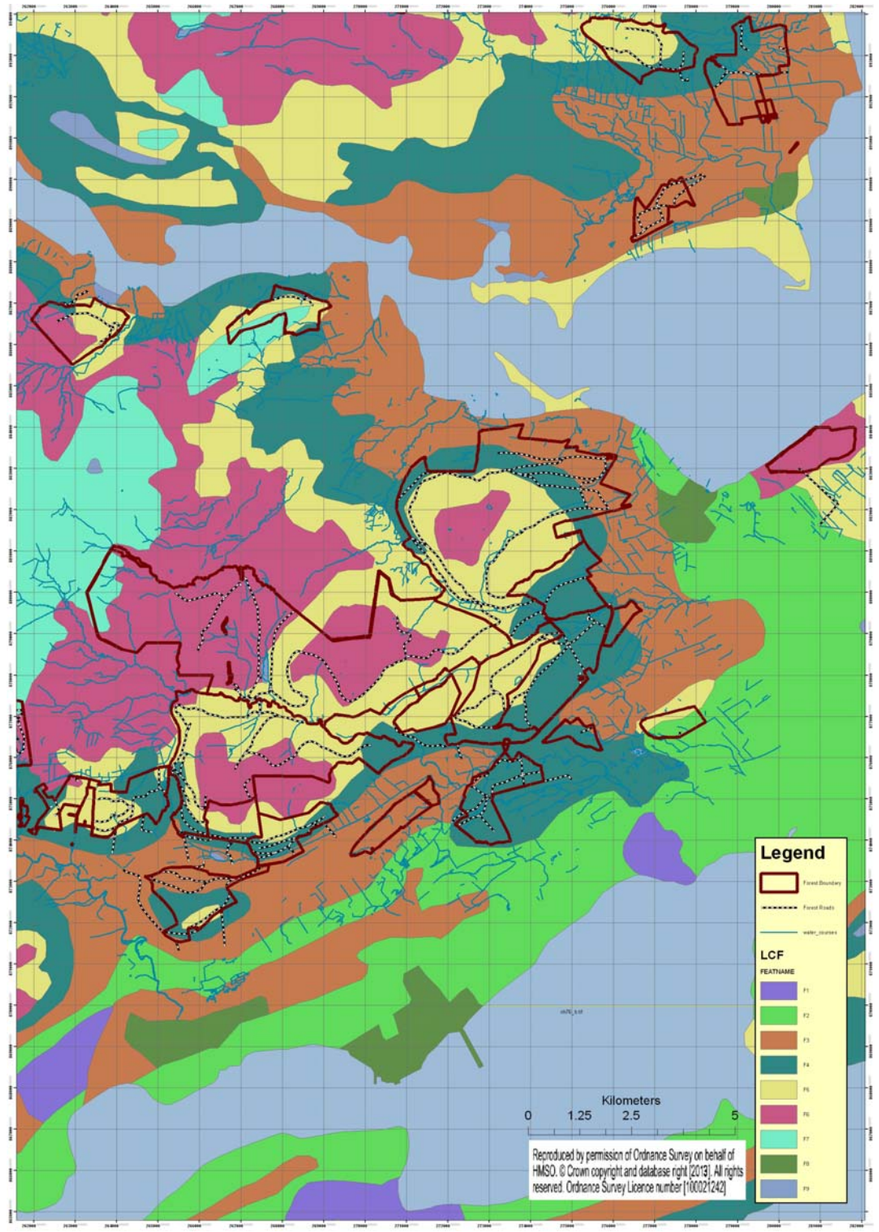
The James Hutton Institute led the development of the Land Capability for Forestry classification - a series of maps with accompanying handbooks at 1:250 000 scale, published in 1988. The classification and guidelines (Towers and Futty, 1989) allows planning to be undertaken based on an assessment of the factors influencing tree growth, notably climate, soils and topography. Silvicultural practices are also considered and developments in this area since 1989 mean that some local interpretation of the Classification is required. The Land Classification for Forestry is based on an assessment of the degree of limitation imposed by the following factors (in relation to productive forestry and not including establishment or enhancement of native woodlands):

- Climate – accumulated temperature and exposure
- Windthrow – the risk of wind damage based on climate data
- Nutrients – assessing base geology and volume of organic/mineral soils
- Topography – giving an indication of the likely limitations on forest operations
- Droughtiness – assessing soil moisture and relating it to tree growth potential
- Wetness – water table movements and the effect on rooting depths
- Soil – relating to basic soil types and assessing effects of any modification

The Land Classification uses the descriptions in the table below:

Class	Description
F1	Land with excellent flexibility for the growth and management of tree crops
F2	Land with very good flexibility for the growth and management of tree crops
F3	Land with good flexibility for the growth and management of tree crops
F4	Land with moderate flexibility for the growth and management of tree crops
F5	Land with limited flexibility for the growth and management of tree crops
F6	Land with very limited flexibility for the growth and management of tree crops
F7	Land unsuitable for the producing tree crops

The Land Capability for Forestry guidance suggests that the majority of the plan area should be capable of growing a range of conifers and a restricted range of broadleaves, with classifications in the range F3 to F6. A map showing the distribution of classifications is shown opposite. The capability of the forests within this plan area to sustain productive forestry is dictated to a large extent by the local climate and equally significantly by geology, soils and the consequent nutrient availability. Site capability is assessed on a coupe by coupe basis to ensure that the correct species and establishment techniques are matched to the site.



Classification for the FDP Area

3.3.3 Access

The forest road network generally provides good access to the LMP Forests. Ongoing investment in infrastructure has largely been concentrated on providing access to windblow and DNB sites and on post harvesting repair. General upgrading across the plan area was undertaken. Further roading is proposed to facilitate harvesting of coupes at Badachonacher, on the upper slopes of Wallace Hill and in Strathrory West, particularly where long extraction distances would lead to unacceptable levels of soil damage and siltation.

Roads currently used for forest management access will need to be upgraded to Cat 1A to take timber traffic once harvesting starts and an extension to the Starthrory Quarry is proposed. The following planned roads are currently noted:

- West Strathrory Spur 1443 metres NH 6538 7994
- Wallace Hill Spur 611 metres NH 6682 7569
- Badachonacher Upgrade 1559 metres NH 7137 7485

At a meeting with Highland Council TEC Services on 17th June 2013 to discuss haulage from the LMP area. HC TECS have expressed concern over subsidence on the Brenachie Road running from Scotsburn to Kildary. It was agreed that although restrictions on felling timings due to the SPA ruled out summer working, volumes from the LISS coupes associated with this road would be limited to 5,000 tonnes per annum and that general limits on haulage would apply – in particular convoy running will not be permitted.

FD Operations staff will contact HC TECS prior to relevant coupes being harvested to ensure that operational restrictions are accommodated in the harvesting contract requirements and that wear and tear on this road can be minimised.

3.3.4 Low Impact Silvicultural Systems (LISS) Potential

With DAMS scores tending toward suitable values and a reasonable proportion of mineral soils, there is good scope across the LMP area for LISS. There are a number of reasons that LISS is a widespread management approach across these forests:

- Creation of favourable conditions for designated species and habitats.
- Protection of water quality for important fisheries.
- Improvement of crop resilience and resistance to disease and climatic events.
- Improvement of landscape quality in relation to Dornoch Firth NSA.
- General improvement of landscape on important tourist routes.
- Prevention of siltation for important water extraction sites (whisky/fishfarm).

Morangie Forest has been a Continuous Cover Forestry Group Demonstration Site since 2001, with treatment trials and regular monitoring ongoing since that time.

The three main areas of activity have been at Lamington, Inchindown and Tain Hill in the Morangie Forest although it has been the intention to develop the maximum area of CCF across the plan area. Initial thinning and group fellings of up to a quarter of a hectare have taken place and the regeneration has been sparse generally, even in areas where scarification took place. Some supplementary planting was undertaken in 2004 – primarily with scots pine – and this has responded well, with natural regeneration now supplementing this and diversifying the species present.

CCF Plot with regeneration at Lamington:

3.4 Landscape and Land Use

3.4.1 Landscape character and value

A site landscape appraisal has been undertaken by FD staff to assess the likely impact of future management and identify current constraints and opportunities to enhance the landscape. The FCS Landscape Architect visited the site with NHFD planning staff on 11th June 2013 and advice was received on the design of prominent coupes. (see – **Appendix 12: Landscape Analysis & Concept** and **Map 8: Landscape Analysis**)

The forests included in the Easter Ross Land Management Plan area are within areas with a landscape character – according to the Scottish Natural Heritage Ross and Cromarty Landscape Character Assessment (McIlveen, 1999) - of rounded hills. Many of the forest boundaries are adjacent to arable farms and improved grazing fields.

The area comprises a mass of hills of similar form. It's a smooth, wide open landscape of sweeping concave and convex slopes, has simple lines, broad open straths and extensive rounded moorland hills. River gullies of interlocking spurs become meandering rivers where the topography flattens out across wide straths.

The scale is vast, lending itself well to the simple regular form of the commercial forests which dominate large sections. However, the contrast between the dark colour of the forest and the browns and purples of the heather and grass moor makes the woodland appear dominant. This is often further emphasised by their geometric forms. Where their shape, particularly of edges, (and their associated colour) contrasts with the underlying landform to break the smoothness of the hillside they draw the eye and can appear unnatural.

Restructuring provides the opportunity to improve landscape issues although the high proportion of CCF across the plan area means that improvements in landscape texture will develop appropriately as species and age classes diversify. Reshaping of forest edges and internal felling boundaries can be in balanced symmetry with the U-shaped straths so they work with, rather than obstruct the visual movement. Scale of coupes can be large, with a simple bold layout to reflect the shape and proportion of the hills overall. Edges should flow with the terrain. Hard straight edges, perpendicular to the contours appear to flatten the curving smooth slopes and should be avoided.

In order to achieve a more coherent landscape design, shapes should respond to the gentle curves and smoothness of the slopes, identified by the landform analysis (shown by red and green arrows). When aligned to natural barriers and responding to the natural lie of the land the forest looks to be in harmony with its surroundings.

Given the strong field patterns that predominate along the forest's lower margins ownership boundaries inevitably mean improvements can be difficult to achieve and a distinct forest edge is not out of place. The composition of that edge – with diverse species – is key to improving the overall landscape.

Along upper margins future landscape will be influenced by the increasing coverage of new native woodlands that are currently at establishment phase. The National Forest Estate will therefore play a decreasingly prominent role in landscape.

The LCA notes that restructuring of conifer plantations will necessarily be a long term operation but suggests good coupe design – generally smaller in size, linkages to other woodland, increased species and age diversity and open space. These requirements will be satisfied by continuing with LISS, by using an increasing diversity of species at restocking and by the establishment of native woodland at the forest margins.

Panorama landscape photographs taken from the most significant viewpoints are contained within the supporting documents at the end of the plan and visualisations have also been produced to support these proposals.

3.4.2 Visibility

The landscape sensitivity of the LMP area is high, viewed from distant points such as the Black Isle and the slopes of Ben Wyvis. However travelling on the A9 from Inverness to Thurso and the Struie B9176, the landscape impact is also quite significant.

The meltwater channels that fringe the Struie Road also add to the character of the area and careful restock planting and open space planning will be critical in improving the landscape.

The forest can be viewed from routes along the Ben Wyvis massif which is very popular with walkers, skiers and mountaineers and from many popular stopping points on the public road network. The northern areas of the LMP forests are significant in terms of the Dornoch Firths National Scenic Area.

3.4.3 Neighbouring Land Use

The following land uses are noted across the landscape adjacent to the LMP area:

- Productive forestry
- Conservation including native woodland establishment
- Tourism including outdoor pursuits, fieldsports and angling
- Renewable energy production including hydro power and wind power
- Arable and livestock agriculture
- Water extraction by distillery and fish farm users

3.5 Social factors

3.5.1 Recreation and Access

Recreation across this area of Rossshire has a high profile. Tourists are passing through on the way to the far north, the east coast of Sutherland and the Northern Isles. In addition many visitors come to climb the munro mountain of Ben Wyvis or enjoy the challenging hill walking available in East Caithness and Sutherland.

The National Forest Estate plays it's part by seeking to provide an appropriate backdrop, but also provides access facilities in the form of car parks, interpretation and forest trails of varying grades. In addition the wider road network provides excellent opportunities for longer walks, cycling, horse riding and cross country skiing. Formal facilities in this LMP area are located at:

- Dounie Hill Fort access trail and carpark
- Scotsburn to Strathrory Drove Road
- Aldie Burn forest trails and car park
- Tain Hill forest trail and car park

The Planning and Environment Committee of Highland Council agreed to adopt the Highland Council Core Paths Plan on 21st September 2011, formalising the network that had been proposed following a three year consultation period. Under the Land Reform (Scotland) Act 2003, Highland Council, as the Access Authority that operates across NHFD, has a statutory requirement to produce a Core Path Plan to cover its area.

The Core Paths aim to satisfy the basic needs of local people and visitors for general access and recreation and provide links to the wider path network throughout the Highland Council area. These Core Paths comprise a mixture of existing paths with some new paths and are close to where people live. They range from tracks worn into natural ground (desire lines) to high-specification constructed paths. NHFD are committed to ensuring that operations do not interfere with access across the Core Path Network and aim to enhance the forest in close proximity to paths to enhance the user's visit.

The Core Paths cater for all types of users - walkers, cyclists, horse riders, canoeists, people with disabilities, etc. and are a key part of outdoor access provision.

Maps of the full network can be viewed at:

http://www.highland.gov.uk/leisureandtourism/what-to-see/countrysideaccess/corepathplans.htm

This LMP area includes the following core paths:

• RC41.01 Strathrory	NH66807782	7.3km
• RC15.04 Struie Hill Mast Track	NH67658650	2.5km
• RC15.08 Edderton to Scotsburn Rd	NH70988274	2.1km
• RC46.02 Aldie to Edderton RoW	NH71708051	4.1km
• RC46.01 Aldie Burn	NH75727911	3.2km
• RC46.03 Tain Hill	NH75268123	1.8km
• RC46.04 Moss Road	NH76388209	1.2km

The following Public Rights of Way are noted and will be afforded similar management:

• HR110 Strathrory Drove Road	NH66737785 to NH73317636
• HR53 Edderton to Tain	NH71968405 to NH76928047
• HR54 Glen Aldie to Tain Springs	NH75937972 to NH74337953
• HR114 Lamington to Aldie	NH75387792 to NH74417933

Surveys are ongoing to identify access points that do not meet current Scottish Outdoor Access Code standards and this will continue during the next plan period.

Operations and Stweardship staff have been routinely involved in incidents involving illegal use of motorbikes across this area of the public estate. In addition during the plan period a suite of interpretation signs to help the FD communicate with visitors about operations and other issues have been developed and are regularly implemented.

At a number of locations throughout Morangie Forest, unauthorised construction of mountain bike trails by local groups has threatened designated sites and much work has been done with the community to find solutions to this ongoing issue.

The forests within the LMP area are regularly used by recreation and education staff to deliver events and programmes of work with local groups and visitors and the annual Euan Macrae Clic Sargeant Bike Event – attracting 200 participants in 2013 – is a highlight of the year.

A small campsite was established at Strathrory in 2008 in partnership with the Scout Association and continues to be a popular venue for weekend camps.

3.5.2 Community

The LMP area falls within the Tain and Easter Ross Ward of the Highland Council Region and is represented by the following Community Councils:

- Kilmuir and Easter Logie CC
- Tain CC
- Ardross CC
- Edderton CC

NHFD included the community councils in the consultation process and the replies, where received, are contained in **Appendix 3 – Consultation Record External**.

In addition representatives of Kilmuir, Tain and Ardross Community Councils attended a forest tour on 20th June 2013 where planning and environment staff showed councillors some of the work going on across the LMP area and highlighted current issues affecting management including biodiversity designations, forest health work and water quality preservation.

3.6 Statutory requirements and key external policies

This Land Management Plan has been drafted to ensure that planning and operations functions will comply with the complex raft of legislation and policies that protect and enhance the Scottish Environment. **Appendices 1 & 2** contain further information on many of the guiding documents.

The Snowman Rally is a regular visitor to Easter Ross Forests

Photo M MacDougall, NHFD