

## North Highland Forest District

North Sutherland Land Management Plan 2016 - 2026



Plan Reference No: 030/516/402  
Plan Approval Date: \_\_\_\_\_  
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(new planting)

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(road construction)

North Highland FD Monument Management Plan

## 1.0 Setting and context

The management of Forestry Commission Scotland's National Forest Estate is guided by the National Strategic Directions (2013), which identifies six aspirations that will influence integrated land management within our boundaries:

- **Healthy** – achieving good environmental and silvicultural condition in a changing climate.
- **Productive** – providing sustainable economic benefits from the land.
- **Treasured** – as a multi-purpose resource that sustains livelihoods, improves quality of life, and offers involvement and enjoyment.
- **Accessible** – local woodlands and national treasures that are well promoted, welcoming and open for all.
- **Cared For** – working with nature and respecting landscapes, natural and cultural heritage.
- **Good Value** – exemplary, effective and efficient delivery of public benefits.

Drawing on these key aspirations North Highland Forest District (NHFD) have drafted a three year Strategic Plan (2014 – 2017). The plan establishes links with the national priorities underpinning these aspirations, detailing local priorities upon which NHFD plans will be founded. The NHFD Strategic Plan ensures that land management activities complement and enhance the local economic, social and ecological individuality of each LMP area. This plan aims to provide local context to the national aspirations and key priorities by detailing local priorities that will support us in achieving sustainable integrated land management across all areas of the National Forest Estate.

**Appendix 1 – 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.

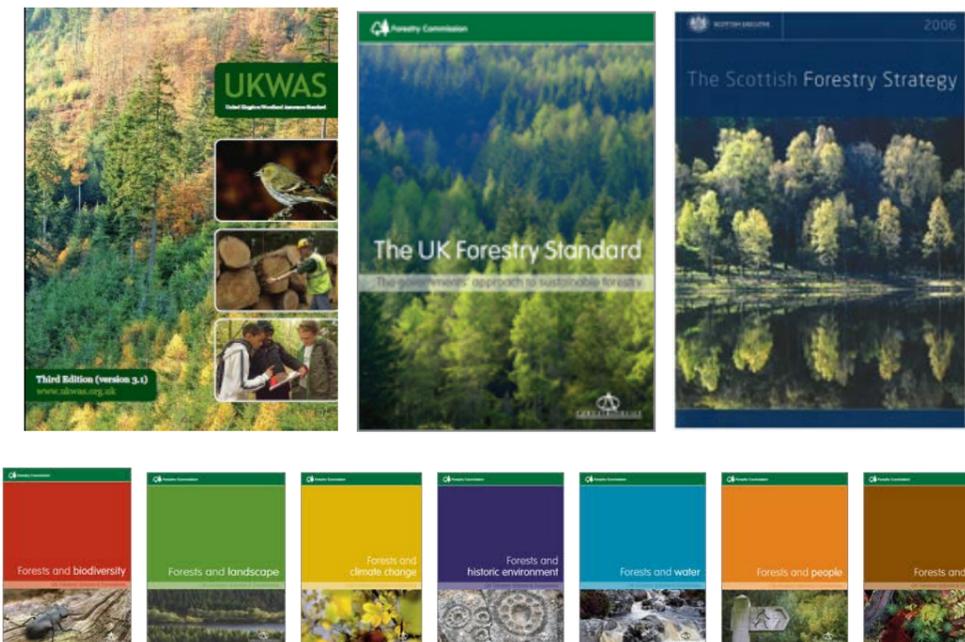
This plan also provides a means to communicate our proposals to the neighbouring communities and stakeholders and serves as an agreed statement of intent against which implementation can be checked and monitored (see **Section 4.4 - FDP Brief** for details of the monitoring proposed).

**Appendix 1** indicates the levels of operational plans that sit below, and are informed by this LMP. In compliance with UKFS the operational plans detail specific implementation detail including:

- 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

Stakeholders requiring this level of information should contact the North Highland Forest District Operations Team following approval of this plan.

**Appendix 2 – Key Policies and Guidance** details the external policy drivers for the proposals in this plan. Current industry and FC guidance will be complied with during any operations associated with this plan, including any subsequent guidance revisions published during the plan's ten year approval period.



## 1.1 History of Plan

The production of North Sutherland Land Management Plan is the full ten year revision of:

- Borgie Forest Design Plan 030/516/253 (expires 04.09.2021)
- Strathnaver Forest Design Plan 030/516/250 (expired 18.11.2011)
- Dalchork Forest Design Plan 030/516/317 (expires 31.05.2021)

Previously the plans had each covered their individual areas however to better address issues of landscape design, water catchment management and biodiversity conservation NHFD have merged the plan areas and the number adopted for the full area is: **030/516/402**. The term 'Land Management Plan' better reflects the wider scope of the document in dealing not only with forestry, but with designated site planning, open ground management, scheduled ancient monument planning and general integrated land management issues. The document's key function remains to seek approval for felling and restocking over the next ten years.

The plan area is situated within the northern part of Sutherland, between Lairg, Tongue and Bettyhill. The western boundary is Loch Shin and A836, while River Naver and River Brora form the eastern boundary of the plan area (**see Map 1 Location & Context**).

The Land Management Plan area covers c. 14266 ha, with significant areas of archaeological features (both scheduled and unscheduled), sensitive watercourses, and bogs; the area offers potential for windfarm development and Dalchork windfarm proposal is currently at the pre-application stage.

42% of the area is productive forest, 8.5% is currently felled in fallow, 43% is open space, just below 5% is under agricultural tenancy, 1.5% open water, and land under other management is under 1%.

Lodgepole pine (*Pinus contorta* – LP) is the most predominant conifer in the productive high forest at over 54% of the stocked area, Sitka spruce (*Picea sitchensis* – SS) is the second most common species across LMP area, at just above 31%.

Japanese larch (*Larix kaempferi* – JL), Hybrid larch (*Larix x eurolepis* – HL), European larch (*Larix decidua* – EL), Norway spruce (*Picea abies* – NS), Douglas fir (*Pseudotsuga menziesii* – DF), Noble fir (*Abies procera* – NF), Corsican pine (*Pinus nigra* – CP) and Omorica spruce (*Picea omorica* – OMR) are planted in varied mixtures across the LMP area, and together they cover about 3% of the stocked area.

Broadleaf species are under-represented within the LMP area, at 4.5%, with Downy birch (*Betula pubescens*) as the main components. Rowan (*Sorbus aucuparia*), willows (*Salix* species), Common Alder (*Alnus glutinosa*), Sycamore (*Acer platanoides*) Common beech (*Fagus silvatica*), Common hazel (*Corylus avellana*), European holly (*Ilex aquifolium*) and Common hawthorn (*Crataegus monogyna*) are also present.



Dalchork forest – a mosaic of productive forest, open bog habitat and restored peatland. Photo A.Baranska, NHFD

## 2.0 Analysis of previous plan

A scoping meeting was held on 14<sup>th</sup> of May 2015 involving key Forest District staff, to analyse the aims of the previous plan and to agree objectives for the FDP brief. More detail of this meeting can be found in **Appendix IV – Internal Scoping**. The key objectives for each plan area are detailed in the table below:

Forest	Borgie	Dalchork	Rosal (covered by Strathnaver FDP)
Objective	030/516/253	030/516/317	030/516/250 (expired 18.11.2011)
Climate change	<p>The FD will concentrate productive conifers on appropriate soils, using species that will be resistant to pathogens and predicted climate change impacts.</p> <p>Significant areas of riparian woodland restoration will be undertaken to improve water quality. Forest operations will comply with Controlled Activity Regulations and Forest &amp; Water Guidelines. Protection of the Borgie River Special Area of Conservation is a primary aim of the design proposals.</p>	<p>The FD will concentrate productive conifer on appropriate soils, using species that will be resistant to pathogens.</p> <p>We will prioritise the recovery of the maximum amount of wood fibre from sites where windblow is endemic and soils on which LP provenances are proving unproductive.</p>	<p>Increase forest structural and species diversity where possible.</p> <p>Expand the native species element of the forest.</p>
Timber	<p>The production from Borgie Forest will continue to form a key element of the FD harvesting programme and we will take advantage of emerging markets to maximise production from poor quality and windblown LP crops.</p> <p>UKWAS compliance will be maintained by employing sound management principles outlined in the Forest Design Plan.</p> <p>In the absence of Lodgepole pine, nutritional mixtures will include Sitka spruce in mixture with Japanese larch, Macedonian pine and other species appropriate to site and soils. We will liaise with colleagues in Forest Research to ensure best practice in using resilient, alternative conifer species is followed.</p> <p>Felling coupes will be designed to facilitate maximum recovery of available timber from these sites and restocking will not take place where peat depth or fertility and climate indicate that this is inappropriate. We will undertake detailed soils survey prior to</p>	<p>UKWAS compliance will be maintained by employing sound management principles outlined in the Forest Design Plan.</p> <p>In the absence of Lodgepole pine, nutritional mixtures will include Sitka spruce in mixture with Japanese larch, Macedonian pine and other species appropriate to site and soils.</p> <p>Felling coupes will be designed to facilitate maximum recovery of available timber from these sites and restocking will not take place where peat depth or fertility indicates that this is inappropriate</p>	<p>Increase forest structural and species diversity where possible.</p> <p>Expand the native species element of the forest.</p>

	restocking coupes to ensure that the correct species are matched to site type to reduce reliance on fertiliser regimes.		
Business development	Given the limitations of LP a great deal of the timber crop from Borgie is appropriate for woodfuel. Borgie will be a contributor to meeting Forest District commitments to our woodfuel customers.	Given the limitations of LP a great deal of the timber crop from Dalchork is appropriate for woodfuel. Dalchork will be a contributor to meeting Forest District commitments to our woodfuel customers.	Seek opportunities to contribute further to rural economy through involvement of local people.
Community development	<p>We will work with the North Sutherland Community Forest Trust to encourage promotion of low key recreation, based around the heritage and wildlife interest which predominate across the forest.</p> <p>We will continue to work with North Sutherland Community Forest Trust to ensure that community aspirations can be met where the forest structure allows.</p>	Dalchork Forest provides a good venue for events such as motor rallies, given the lack of competing recreation interest and the extensive forest roads infrastructure. These events will continue to be encouraged.	Seek opportunities to contribute further to the rural economy through involvement of local people.
Environmental quality	<p>Borgie Forest forms a fundamental component of the River Borgie Catchment and all operations proposed will be carried out with water quality protection very much to the fore. SEPA have been a very helpful consultee during the scoping phase of this FDP revision.</p> <p>Landscape appraisal has been undertaken and restocking coupes will be designed in ways that will reduce the landscape impact of the forest. An increase in the native woodland element will help to soften</p>	<p>Dalchork forms a fundamental component of the Shin Water Catchment and all operations proposed will be carried out with water quality protection very much to the fore. Both SEPA and the Kyle of Sutherland District Fisheries Board have been very helpful consultees during the scoping phase of this FDP revision.</p> <p>Dalchork Forest is rich in archaeology, both scheduled and unscheduled. We will work with both Historic Scotland and the FCS archaeologist to deliver a programme of prioritised protection and conservation work.</p>	<p>Expand the native species element of the forest.</p> <p>Improve the linkage with adjacent habitats.</p> <p>Use low impact and input forest management - e.g. drainage, cultivation, and harvesting techniques; use of fertilisers and chemicals.</p> <p>Protect archaeological/cultural sites and develop interpretation facilities.</p>

	<p>plantation margins.</p> <p>Borgie Forest contains archaeology, both scheduled and unscheduled. We will work with both Historic Scotland and the FCS archaeologist to deliver a programme of prioritised protection and conservation work. Operations will ensure that new coupes are surveyed prior to felling to ensure any undiscovered heritage interests are protected from unnecessary damage.</p>	<p>Operations will ensure that new coupes are surveyed prior to felling to ensure any undiscovered heritage interests are protected from unnecessary damage.</p>	
Biodiversity	<p>This plan proposes restoration peatland habitats where appropriate, removing productive conifers and buffering important sites with native woodland to prevent further deterioration.</p> <p>Where appropriate we will gradually replace non-native species on PAWS sites with either productive native conifers or appropriate native woodland types.</p> <p>Significant opportunities to improve riparian woodland and restore peatland habitat will be taken. The area of native woodland will be increased gradually by natural regeneration where seed sources exist. The Peatlands SAC will be enhanced by proposals to extend peatland restoration and establish low density native woodland on appropriate soils. The River Borgie ecosystem will be enhanced by appropriate riparian woodland planting.</p> <p>We will continue to work with partners such as the Highland Council Ranger Service to deliver environmentally themed forest education.</p>	<p>This plan proposes restoration peatland habitats where appropriate, removing productive conifers and buffering important sites with native woodland to prevent further damage.</p> <p>The plan will take account of the priority species such as Black grouse and Black throated diver that use the forest.</p> <p>The Peatlands SAC and Ben Klibreck SSSI will be enhanced by proposals to extend peatland restoration and establish low density native woodland on appropriate soils.</p> <p>Connectivity will be enhanced by extending restocking into riparian zones with the intention of enhancing native woodland fragments or creating seed source that in time will regenerate to provide improved habitat diversity.</p>	<p>Assist in the preparation of the Peatland Habitat Action Plan to develop policy.</p> <p>Protect and enhance SSSIs through appropriate restructuring.</p> <p>Expand the native species element of the forest.</p> <p>Improve the linkage with adjacent habitats.</p>

Original Plan Objective	Did the Implementation meet the objective?	Does the objective remain desirable or achievable?
<b>Climate change</b>	All forest blocks have suffered from extensive wind damage. Significant areas of conifer crops planted on unsuitable soils were clearfelled during the previous plan. Restocking proposal focused on concentrating productive conifers on most productive sites, while increasing areas of riparian and native woodland element. Significant areas of deep peat were subjected to peatland restoration works.	The objective remains important for all forest blocks covered by North Sutherland LMP. Clearance of windblow will continue (as the catastrophic storm from January 2015 as inflicted further damage). Forests will be divided into productive, native, riparian and successional woodland zones with significant areas of afforested deep peat to be restored to active bog. Proposed windfarm in Dalchork, if approved, will contribute to renewable energy production targets. It remains an important objective.
<b>Timber production</b>	Big scale of wind damage and DNB infection has resulted in big scale felling; many coupes had been felled earlier than proposed in original plans to allow for maximum timber recovery. Restocking aimed to concentrate productive conifers on most suitable sites, increasing areas of riparian and native woodland and restoring the poor and wet afforested peatland sites (targeting mainly those with connectivity to designated peatland sites) to active bogs.	Timber production remains important in Borgie and Dalchork. We will continue to concentrate productive conifers on most fertile sites. By using watercourses, forest roads, existing and designed open ground as natural coupe boundaries, we will create more wind resilient forests, reducing the risk of catastrophic wind damage in the next rotation. It remains an important objective.
<b>Business development</b>	All forest blocks are remote, with Lairg (south of Dalchork) being the biggest population centres. There is local demand for firewood.	North Sutherland has limited employment opportunities and development of local businesses would be welcomed. It still remains a valid objective.
<b>Community development</b>	During the previous plan period NHFD has cooperated with North Sutherland Community Woodland Trust delivering few interesting projects in Borgie. The Gaelic Tree Alphabet walk is very popular, and the log cabin became a valuable community asset, providing a venue for workshops and overnight accommodation. Cooperation with Timespan Museum in Helmsdale brought The Unknown, a cast iron sculpture by Kenny Hunter, to Borgie.	Still an important objective. We will work with North Sutherland Community Forestry Trust and other community groups to deliver further projects to meet aspirations of local people. Limited funding available might put more pressure on securing funds from other sources (e.g. grants, therefore the communities will need to take more proactive role in any new projects. All FES forest are open to members of the public under the Scottish Outdoor Access Code 2003, however the District main focus will be on recreational provisions in Borgie, as this block is used regularly by local residents and the local community is actively engaged in projects aiming at making the forest more accessible and attractive for visitors.

Original Plan Objective	Did the Implementation meet the objective?	Does the objective remain desirable or achievable?
<b>Environmental quality</b>	<p>Conifers planted right up to the banks of watercourses were in many places felled. New riparian woodland was created in previously open (or planted with conifers) riparian corridors.</p> <p>Operations adhered to Forest and Water Guidelines and other relevant regulations to protect water environment is sensitive (Shin) and /or important for salmon and fresh water pearl mussel catchments (Borgie and Naver). NHFD has worked closely with SEPA to establish if forest management in Shin catchment has influenced high phosphorus loading in River Tirry and Loch Shin. Funds were made available for SEPA to run a core sampling of sediments in Loch Shin, to try and determine if the high phosphorus levels are connected with change to land and/or fishery management. NHFD is providing SEPA with water samples from River Tirry tributaries in order to establish what influence forest operations have on the quality of water. District's annual program of aerial and hand fertilisation is being agreed with SEPA.</p> <p>Extensive areas of conifer crops damaged by DNB infection and /or windblow were cleared during the previous plan period, leading to big, unsightly clearfelled areas, visible from the public road.</p> <p>Archaeological features are being incorporated into the open ground network. In some places (Rosal, Dalchork) grazing animals were brought in order to keep the vegetation down and help to keep sites accessible.</p>	<p>A key objective of the North Sutherland LMP. We will continue to improve the environment by expanding the native species element of the forest and creating buffers of successional woodland between the open bog and productive forest.</p> <p>All future operations will adhere to regulations valid at the time of operations and local agreements with SEPA.</p> <p>The big clearfelled sites give a scope for better coupe design for the next rotation, allowing for more resilient, diverse and visually attractive forest.</p> <p>The heritage sites will be maintained and protected, and further surveys will be carried out prior to operations.</p> <p>The proposed windfarm in Dalchork, if approved, will contribute to Scottish Government's renewable energy production and emission reduction targets.</p>
<b>Biodiversity</b>	<p>Significant effort was made during the previous Plan period to restore valuable peatland habitat and to protect and enhance water quality in all three blocks. Conifers planted right up to the banks of watercourses were felled, and the riparian corridors either were planted, or are to be planted with native broadleaves, to create riparian woodland.</p> <p>NHFD recognises the impact forest operations might have on sensitive catchments, especially those with freshwater pearl mussel and salmon interests. All operations during the previous plan period were carried out responsibly and in line with relevant water protection regulations and local agreement with SEPA and local fishery boards.</p>	<p>A key objective of the Plan. We will continue our efforts to protect the watercourses during the forest operations and to enhance the aquatic environment by creating riparian woodland.</p> <p>The native species element of all blocks covered by North Sutherland LMP will expand, creating better habitat links.</p> <p>We will continue to remove conifer crops and to block drains and furrows on the poor and wet deep peats, where acceptable tree growth rate in next rotation is unlikely to be achieved without significant drainage and fertiliser input, and where vegetation, peat condition and hydrological links with adjacent peatland sites indicate that the restoration works will be successful.</p> <p>We will create successional woodland buffer between the open habitat and the productive forest, making the change in land use more gradual and creating a low density wet woodland – a rare habitat.</p>

## 3.0 Background information

### 3.1 Physical site factors

#### 3.1.1 Geology, soils and landform

North Sutherland LMP area is dominated by Moine granulites and schist (metamorphosed muddy and sandy sediments), overlying older Lewisian rocks. The underlying geology contributes significantly to the lack of fertility, in particular to low availability of phosphorus. The soil are dominated by deep peat and peaty podzols and gleys, which range from medium fertility (where the underlying rock is close to the surface and drainage is relatively free), to very nutrient poor where deep peat is predominant. Some brown earths (typical and podzolic) are present by riversides.

Implications of the underlying lithology on the establishment of second rotation crops are referred to further in section 3.3.2 Site Capability.

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 earth	FC Group 1
Podzols	FC Group 3
Ironpan soils	FC Group 4
Peaty surface water gleys	FC Group 6
Juncus bog	FC Group 8
Molinia bog	FC Group 9
Unflushed blanket bogs	FC Group 11

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”.*



Deep peat in Dalchork – Photo A.Baranska (NHFD)

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 district, and is covered by the second River Basin Management Plan (2015 – 2027).

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. Two biggest challenges identified in the second river basin management plan are diffuse pollution and modifications to the physical conditions of water bodies. 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.

The forest blocks covered by the North Sutherland LMP lie within River Borgie, River Naver and River Shin catchments. None of these catchments suffer from acidification, however there is number of 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; there is also one water body at a good status (Loch Beannach), mentioned in the table as it deteriorated from high status – please see opposite table for details.

The 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 in the table below 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 **LMP Proposals** section of this plan and in **Section 6.4 – Management Prescriptions** and **Section 6.5 – Native Woodland Prescriptions (NVC)**.

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 distribution of commercial forestry within the above mentioned catchments, NHFD acknowledge that appropriate controls on forest operations are vital to improve the current position.

Water body ID	Water body Name	Current classification
20099	River Tirry (Loch Shin to Rhian)	<b>Poor</b> (degraded from 'moderate' in previous classification)
20595	River Naver (sea to Loch Naver)	<b>Moderate</b> (no change from previous classification)
20101	Allt Chaisegail	<b>Poor</b> (no change from previous classification)
20102	Feith Osdail	<b>Poor</b> (degraded from 'moderate' in previous classification)
100065	Loch Shin	<b>Bad ecological potential</b> (no change from previous classification)
100083	Loch Beannach (drinking water source)	<b>Good</b> (degraded form 'high' in previous classification)

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 (2<sup>nd</sup>) river basin management plan for the Scotland river basin district (2015 – 2027) 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 occurrence 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

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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 its 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.

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.

Arising 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.

### 3.1.2.1 Loch Shin

In 2011 Loch Shin went from 'Good' to 'Moderate' status for phosphorus. The over ecological potential of Loch Shin is currently assessed as 'Bad' and SEPA, other agencies and landlords within the catchment area have agreed on a plan to try and gain better understanding of historical reasons for high phosphorus loading, and if possible, to return total phosphorus levels to 'Good' status. A joint SEPA/FES investigative study is currently being carried out with an aim to provide information of phosphorus loading in relation to land and water management in the Shin catchment. Core samples of Loch Shin sediments had been taken in 2015 and the results should soon be available. The expectation is that they will provide an answer if the catchment had always have high phosphorus levels, or if there had been a change at a given point in the past, possibly linked to a change of water and/or land management, when the phosphorus levels had started to rise.

As a result of increased water sampling from Loch Shin itself and its main river inputs (River Tirry, Fiag and Merkland). River Tirry holds a large proportion of commercial forestry and represents 33% of the catchment, and (along Merkland) has substantially higher phosphorus concentrations than Loch Shin. It is therefore essential to ensure that all forest operations are carried out in adherence to The UK Forestry Standard and General Binding Rule (GBR) 18 of the Controlled Activities (Scotland) Regulations (CAR). Further catchment specific mitigation measures to reduce phosphorus run-off to minimum will be agreed annually, when programme of 'high risk' activities, such as felling, mounding and fertilisation will be submitted to SEPA in order to adequately address the issues connected with phosphorus levels within the Shin catchment area (Dalchork forest).

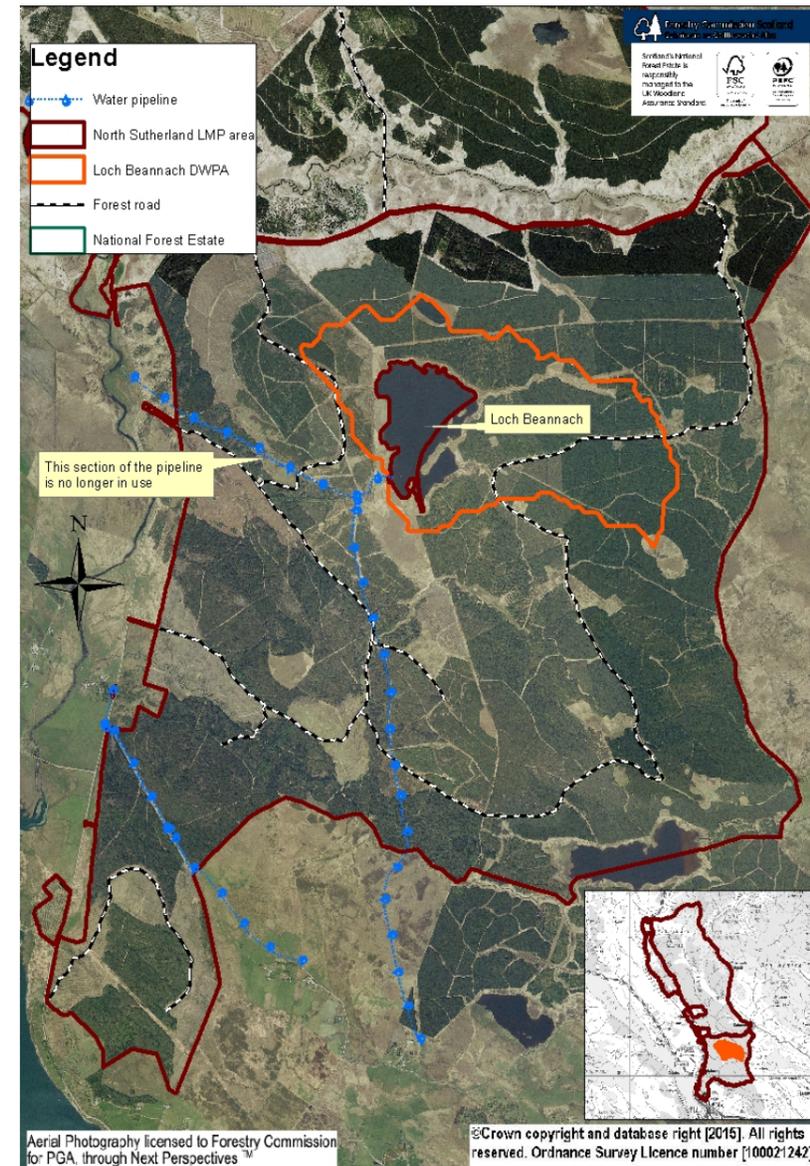
### 3.1.2.2 Flood risk

The North Sutherland LMP comprises three areas where there are records of flood risk issues: River Shin Catchment, River Naver Catchment and River Borgie Catchment. As National Forest Estate represents substantial areas of River Shin and River Borgie catchments, forest management, and especially the extent of felling, might impact on flows within these catchments. The FES ownership within River Naver catchment is relatively small, with the area under forestry management limited to c. 119 ha (the remaining area is Rosal Clearance Village site and a common grazing area), therefore no significant impact of forest operations on flows

within this catchment is anticipated. All operations on NFE will adhere to the Forest and Water Guidelines and the Water Environment (Controlled Activities)(Scotland) Regulations (CAR) and the General Binding Rules published by SEPA. Appropriate measures for each site will be agreed at the work plan level and put in place to prevent increase of runoff and/or woody debris from entering watercourses.

### 3.1.2.3 Loch Beannach Drinking Water Protected Area (DWPA)

Loch Beannach, located in the southern part of Dalchork Forest (please see the map on the opposite page for details) is a drinking water abstraction point, supplying Savalbeg Water Treatment Works (WTW). Scottish Water's (SW) abstraction points are designated as Drinking Water Protected Areas (DWPA), under Article 7 of the Water Framework Directive. Annex 1 of Scottish Water's consultation response, detailing all precautions to be taken while carrying out operations in a vicinity of Scottish Water assets is attached a to North Sutherland LMP as Appendix ? – Scottish Water List of Precautions to protect Drinking Water and Assets. Currently (January 2016) there are some concerns regarding water quality in the above area, in particular colour and organics. Currently there are no concerns about the water yield, but Scottish Water made a request to be consulted early at a workplan stage prior to any forest operations within the Loch Beannach DWPA. **A minimum 3 months' notice should be given in advance of any forest operations taking place within the vicinity of Scottish Water assets (pipelines) to give SW sufficient time to review protection measures and secure all appropriate internal approvals.**



Scottish Water assets and Loch Beannach DWPA.

### 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.

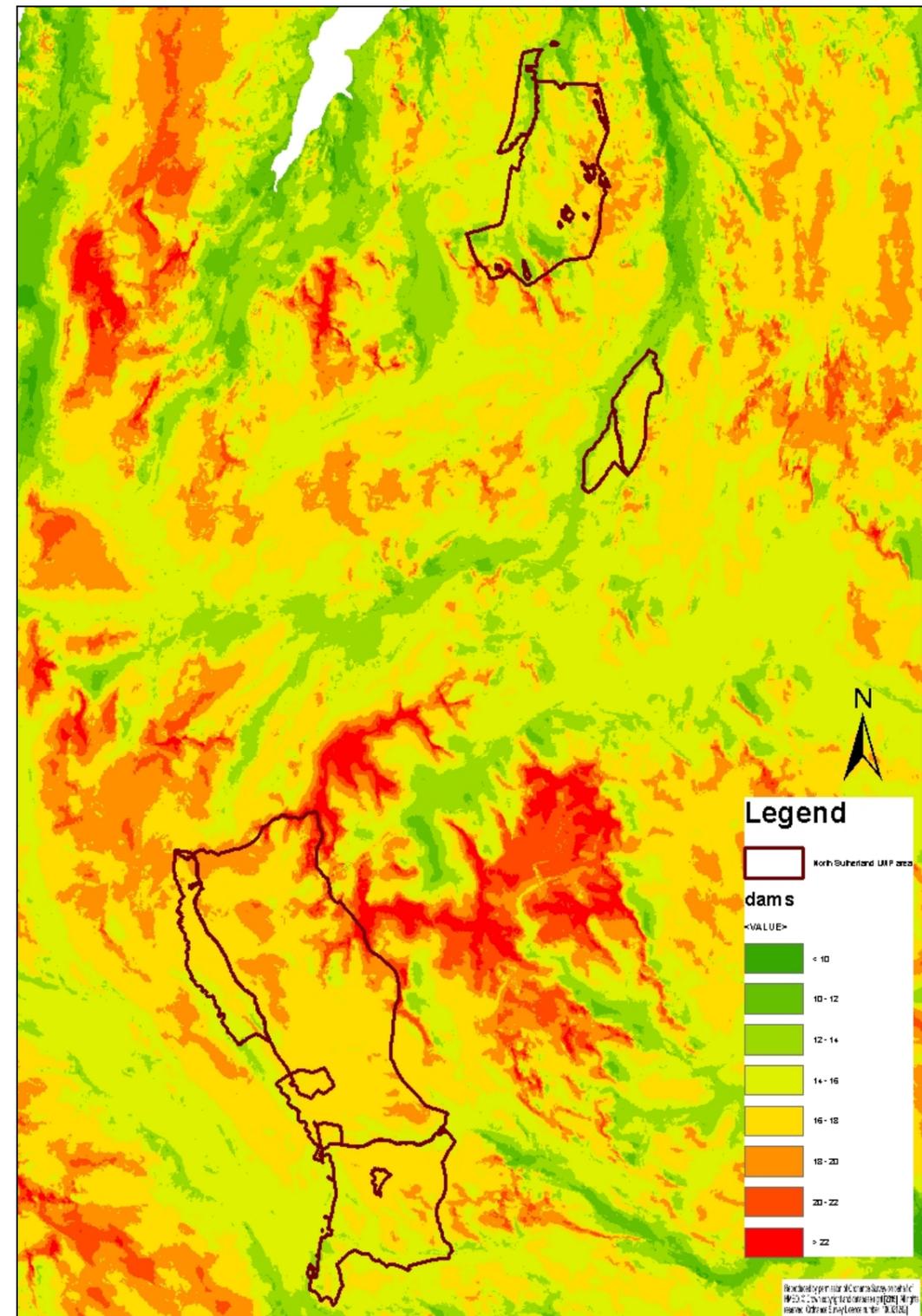
Windiness is assessed using the Detailed Aspect Method of Scoring (DAMS) developed by Quine and White (1993, 1994) which analysed tatter flag data to produce models that would predict the speed and frequency of strong winds.

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 16 – 18 dominate the LMP area, with quite significant differences across the forest blocks.

The areas with high DAMS scores (18 – 22) are restricted to northern and particularly north-eastern parts of Dalchork and southern fringes of Borgie. Lower DAMS score areas are located mainly in relatively sheltered Rosal and in lower lying parts of Borgie, where the scores can be as low as 10, but mainly varying from 12 to 16.

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



DAMS across the LMP Area

## 3.2 Biodiversity and Heritage Features

### 3.2.1 Designated Sites

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

Caithness and Sutherland Peatlands	SPA
Caithness and Sutherland Peatlands	SAC
Caithness and Sutherland Peatlands	RAMSAR
Lairg and Strath Brora Lochs	SPA
Lairg and Strath Brora Lochs	SSSI
Strath Carnaig and Strath Fleet Moors	SPA
Strath Carnaig and Strath Fleet Moors	SSSI
River Borgie	SAC
River Naver	SAC
River Borgie	SSSI
West Borgie	SSSI
West Strathnaver	SSSI
Cnoc an Alaskie	SSSI
Ben Klibreck	SSSI

North-eastern edge of Dalchork block lies within 35. Ben Klibreck – Armine Forest Wildland Area and it's north-western corner and edge are within and/or adjacent to 37.Foinaven – Ben Hee Wildland Area. Please see **Map 3 – Environmental Features** for details.

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 North Sutherland LMP area make it a very important area for biodiversity and future proposals will reflect the status.

### 3.2.2 Cultural Heritage

North Sutherland is among the richest areas in the UK for archaeological features and the forests within the North Sutherland LMP are extremely rich in both scheduled and unscheduled sites. In general, majority of the unscheduled monuments relate to previous settlement and agricultural land use e.g. brochs, farmsteads, hut circles, sheep fanks.

Rosal Clearance Village is one of the key visitor destinations in the North Sutherland appropriate management of the site is one of District's CRT priorities. Currently the site is being grazed (by sheep) to prevent re-colonisation by trees and shrubs. There are plans to replace the existing interpretation panels spread across the site with new ones – consultation on that proposal was run simultaneously to public consultation of the LMP proposals.



One of the interpretation panels in Rosal Clearance Village. Photo A.Baranska, NHFD

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 VI – 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 completing 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.



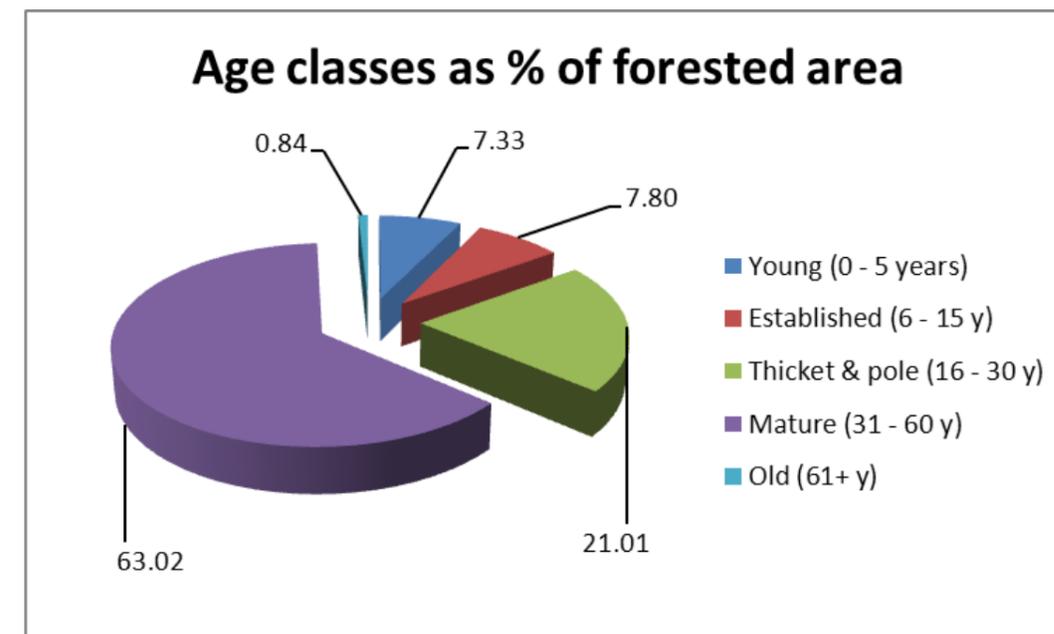
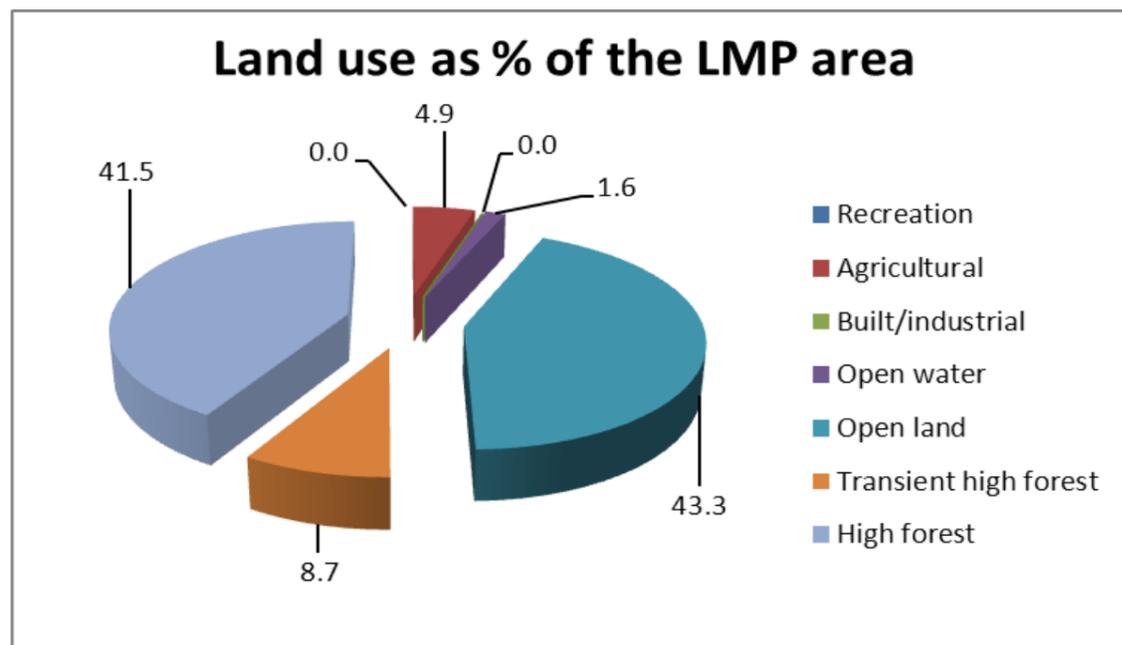
Broch in Dalchork – Photo A.Baranska (NHFD)

### 3.3 The existing forest

#### 3.3.1 Age structure, species and yield class

##### Land use

The current land use structure within the North Sutherland LMP shows almost an equal split between afforested ground (just above 50%) and other land uses (just below 50%) (like open, agricultural, open water, built-up areas). In afforested category are both existing crop (41%) in various age classes – please see the 'Age structure' paragraph below and land currently awaiting restocking (just below 9%). North Highland FD adopted an average 5 year fallow, to minimise possible damage to newly planted trees caused by *Hylobius abietis*.



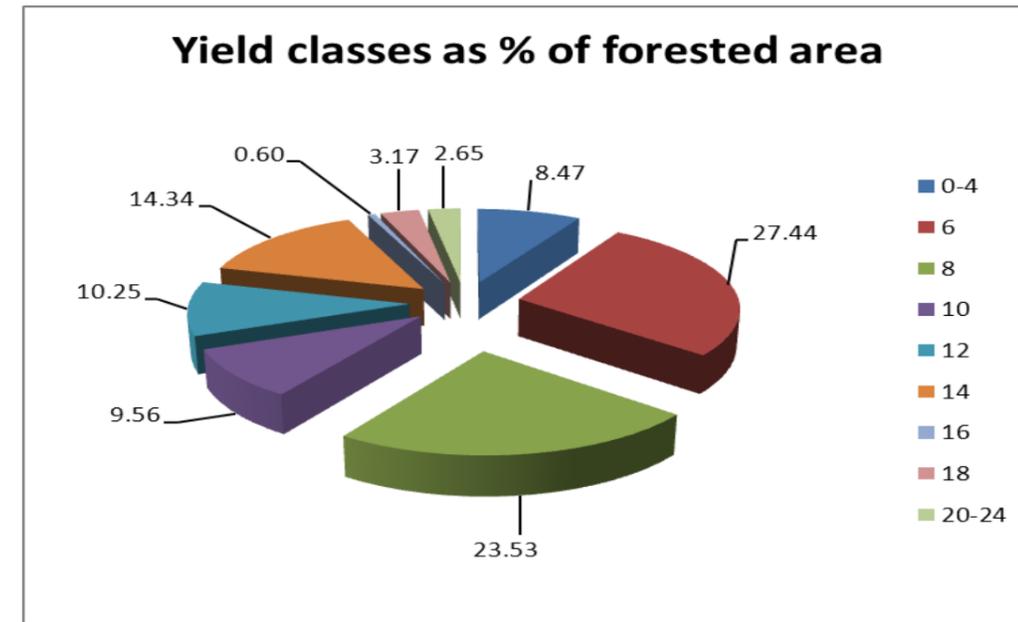
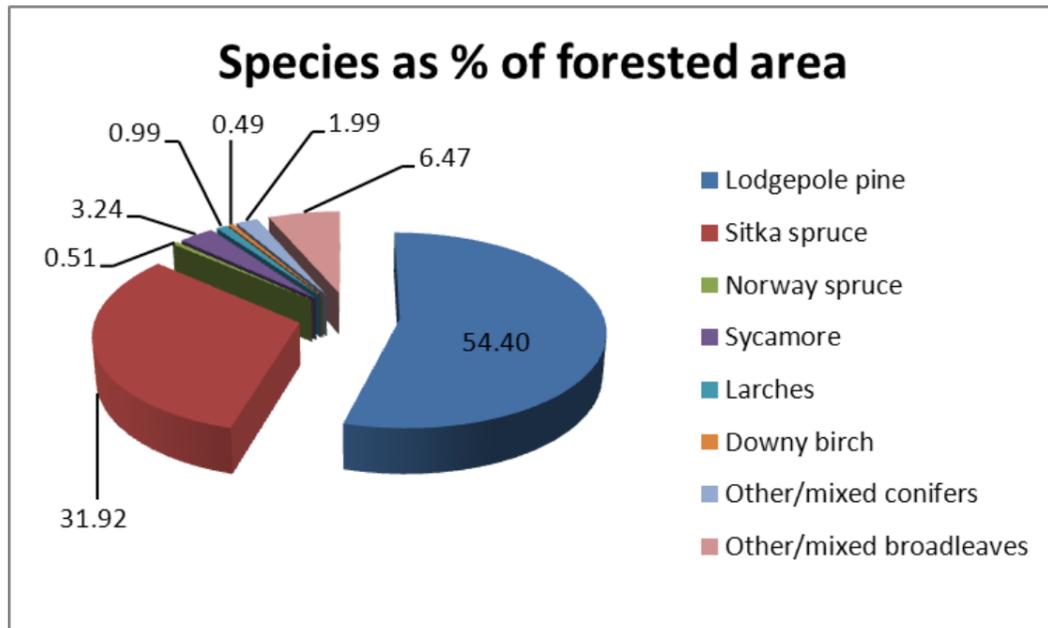
### Age Structure

The age structure of the forests within the North Sutherland LMP area is reasonably wide, however there is scope to provide much greater diversity within the five main age class structures. The 'Mature' age class (31 - 60 years) has by far the largest representation – 63% - due to the large scale planting undertaken during the 70s, while the old (61 years and over) is under represented (less than 1% of the forested area), due to the history of forestry in Sutherland. The 'young' and 'established' age classes (0 - 5 years and 6 – 15 years) have a relatively small share (over 7%), while the 'thicket and pole' age class (16 – 30 years) is better represented at just above 21%, mainly due to the timing of felling, in many areas dictated by the windthrow clearance, and the 5 year fallow adopted across the District.

Larger scale felling coupes will occur in Dalchork (phase 1), where the size and shape of coupes is dictated by the catastrophic windthrow (January 2015); and due to peatland restoration programme. The prescribing of permanent native woodland and riparian woodland zones will influence age class structure, as veteran trees will develop over coming decades.

### Species

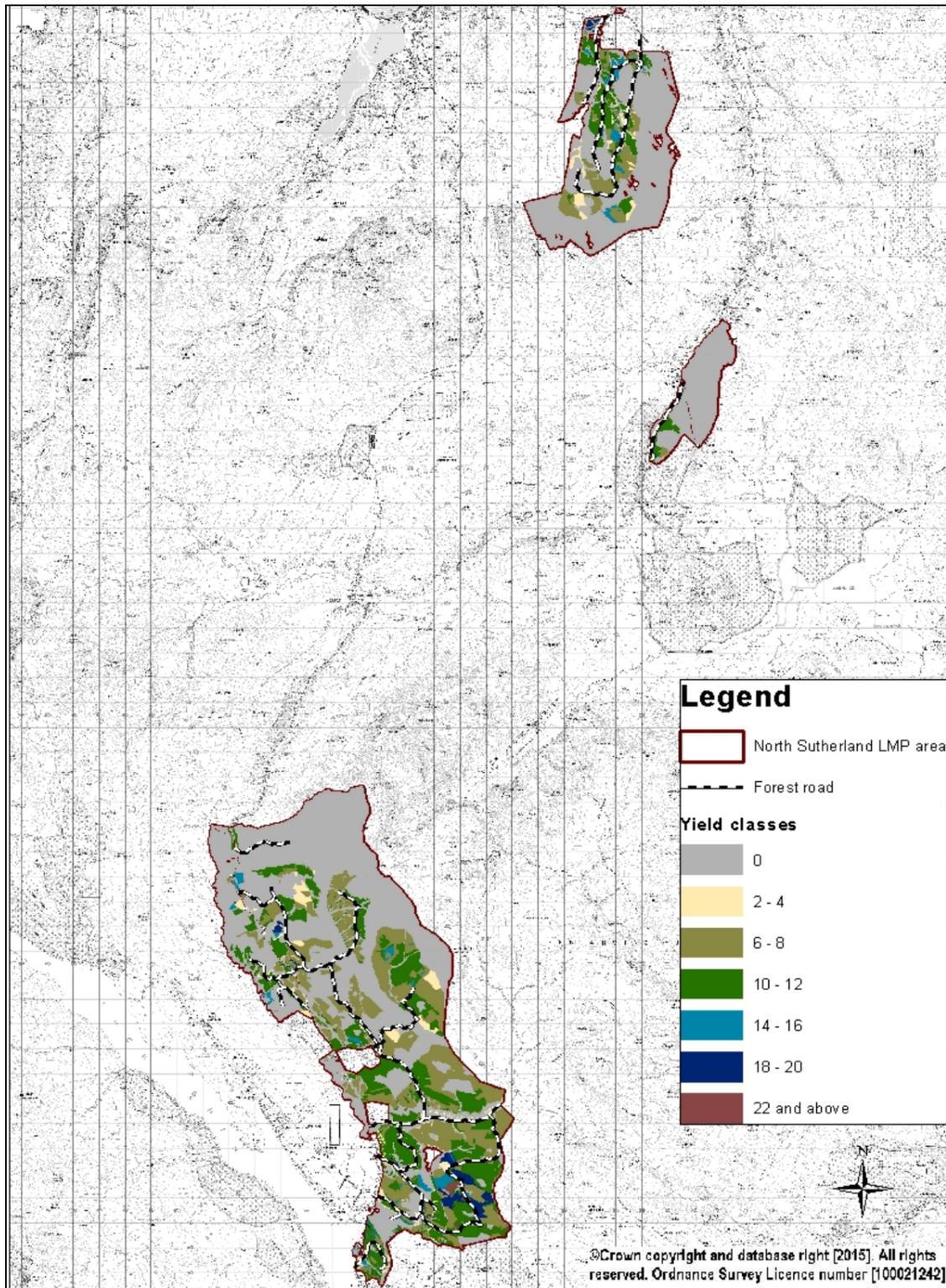
The chart below illustrates the species range across the LMP area. Lodgepole pine (LP) predominates (over 54% of the forested area), with Sitka spruce (SS) the second most common species (just under 32%), due to soils types and past management objectives. LP and SS are planted both in pure species blocks and in mixture. Broadleaves cover over 10% of the forested area, mostly due to new planting carried out on former farmland, with Sycamore as the most significant species (over 3%). The broadleaf element is relatively well represented, and there is considerable scope for extension of this area, particularly in relation to the creation of peatland edge and transitional woodland, and the establishment of riparian native woodland intended to buffer watercourses and create habitat links.



Other conifer species (3.5 % of the forested area) have been planted only where climate and localised improvements in soils allowed. The scope for species diversification within productive conifer crop is limited by soil and climate conditions of Caithness.

#### Yield Class

Yield classes found in the LMP area are typical for the species and site types encountered – just over 50% of the forest area lies in the 6 – 8 range, and just above 34% within 10 – 14 range. The areas of LP where yield class falls between 4 and 8 are largely found where soils are wet, exposure is relatively high and nutrient levels are challenging. 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, however it is accepted that some areas will only be capable of producing biomass. The poorest sites have undergone analysis to assess suitability for productive forestry and this has informed the future habitat proposals.



Yield Class distribution across the LMP area.

### 3.3.2 Site Capability

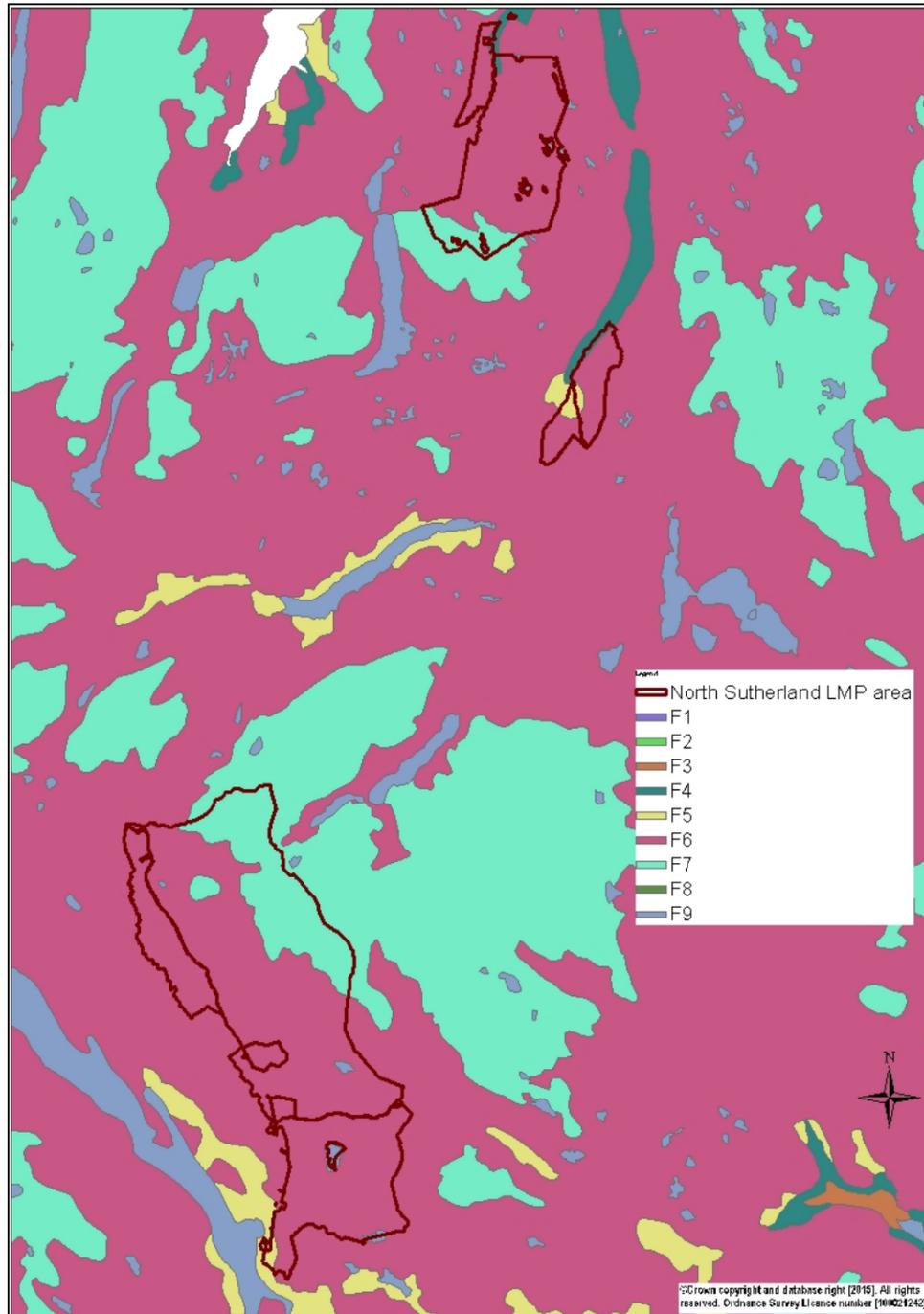
The James Hutton Institute led the development of the Land Capability for Forestry (LCF) classification - a series of maps with accompanying handbooks at 1:250 000 scale, published in 1988. The classification and guidelines (Towers and Fitty, 1989) allows planning to be undertaken based on an assessment 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
- Draughtiness – 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 has very limited flexibility for the growth and management of tree crops, therefore the choice of species is restricted to those capable of growing in wet and exposed locations with poor soils. A map showing the distribution of classifications is shown below. 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.



LCF across the LMP area.

### 3.3.3 Access

The forest road network generally provides relatively good access to the LMP Forests. Further roading is necessary to facilitate harvesting of coupes in Dalchork and Borgie, 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. The following planned roads are currently noted:

Location	Length (metres)	Grid reference
Borgie south-east	780	NC 6650 5151
Dalchork north	630	NC 5368 2354
Dalchork north-east	850	NC 5422 2248
Dalchork – South Coire	1250	NC 5921 1947
Dalchork – Loch na Fuaralachd	600	NC 5923 1580
Dalchork – Loch Dail na Copaig	550	NC 5719 1496
Dalchork south-east	200	NC 6180 0989
Dalchork south	230	NC 5790 0812
Dalchork west	220	NC 5338 2166

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 relevant public roads can be minimised.

### 3.3.4 Low Impact Silvicultural Systems (LISS) Potential

With DAMS scores in moderate and high values and a small proportion of mineral soils, there scope for LISS within the North Sutherland LMP is very limited (LISS is currently used on a small scale in Borgie) and might be considered for few selected sites in next rotation.

## 3.4 Landscape and Land Use

### 3.4.1 Landscape character

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 FES Landscape Architect visited the site with NHFD planning staff on 16<sup>th</sup> of July 2015. Due to the dramatic landform of Sutherland, the views are both distant and close and intimate (Borgie viewed from Altnaharra to Tongue A836 public road; Dalchork from Lairg to Altnaharra A836 public road).

Majority of the forested area covered by the North Sutherland Land Management Plan area lie where four distinct landscape character zones meet – according to the Scottish Natural Heritage Caithness and Sutherland Landscape Character Assessment (C. Stanton, 1998) – of sweeping moorland, moorland slopes and hills, strath and irregular massif.

The sweeping moorland landscape (low lying parts of Dalchork and surroundings) is largely uninhabited and creates the sense of remoteness, with an overall impression of wide open space. Existing conifer plantations, with simple shapes and species composition are currently, or will in the future be restructured to achieve more diverse species and age composition however it is happening in stages. The huge scale of the landscape and limited visibility allows for bigger felling coupes. New woodland creation in this landscape is highly unlikely due to the dominating soil type (deep peat).



The sweeping moorland landscape in North Dalchork. Photo A.Baranska, NHFD

The moorland slopes and hills landscape character forms transition between the low lying sweeping moorland and the higher mountains. Sloping open moorland gradually rises to form broad hills, which possess massive proportions in the landscape and usually appear wider than their height. The sloping landform creates plateaux, shelves and basins - these areas tend to

be poorly drained and sometimes contain patches of peat, lochs or *dubh lochans*. A surface of bare rock is sometimes exposed and visible on hill tops and glen sides. The extend of visibility tends to be varied; overall impression is however of openness and offers possibility of unrestricted movement. Settlements and farms are usually concentrated along the straths - at the edge of this landscape character. The interior at large remains uninhabited, typically inaccessible to vehicles and grazed by deer. Fragments of broadleaf woodland survived at inaccessible locations, like remote straths and rocky crags. Conifer plantations, planted in majority of cases from the 50ties onwards, tend to be located close to access routes; upon the foot slopes to utilise free drainage. Both broadleaf and conifer woodlands are under deer grazing pressure, resulting in little natural regeneration appearing on the ground.



The moorland slopes and hills landscape in eastern part on North Dalchork

Photo A.Baranska, NHFD

Mature conifer plantations are being restructured to minimise their possible negative impact on landscape; the improvement mainly happening by re-designing the plantation boundaries and making them more sympathetic to the landform, but also by minimising disturbance to underlying soil and drainage, and conditions on site. The huge scale of the landscape allows for big coupes, which are a necessity in current windblow and tree health situation across the LMP area. Woodland expansion should be preferably achieved by utilising natural regeneration, but given the often exposed and marginal soils, combined with big deer pressure, often limits the options to planting. The visual impact of new planting might be

reduced by designing woodlands to make them appear to sit within the landform. The composition of that edge – with diverse species – is key to improving the overall landscape.

The irregular massif landscape comprises a mass of large mountains, enormous in size. The mountain peaks form landmarks, distinguished by their height, profile or/and ground cover, rising above the mass of lower slopes. The view of the mountains changes as one travels through the landscape, making them exciting and larger than they are. The landscape has a complex visual composition; there is a variety of lines, points, textures and colours, appearing differently according to changes in weather and light conditions. This type of landscape is largely uninhabited and difficult to access. The small number existing of roads and settlements tends to be located at the edge of this character type, leaving the interior in a relatively wild state. This creates a sense of remoteness, enjoyed by visiting deer stalkers and hill walkers. The visibility varies: limited visibility upon lower slopes creates sense of retreat, while the peaks offer extensive panoramic views and the experience of open space and exposure. The irregular massif landscape is extensively occupied by deer – staying on the higher slopes in the summer and coming down to lower areas in winter. The forests in this landscape are located at its edge, rising from moorland hill and slopes type and reaching up the slopes (e.g. southern part of Borgie). The mountain landscape is sensitive to disturbance, both physically (due to the fragile soils, flora and fauna) and visually. Changes in land use have significant impact, due to extensive views from high peaks; therefore any changes to the shape and/or size or species composition of the forests should be carefully considered.



The irregular massif landscape at the southern edge of Borgie Forest.

Photo A.Baranska, NHFD

Rosal Forest lies in relatively open Strath Naver running through moorland slopes and hills landscape. The slopes rising from the wide strath floor are not very high nor steep;

therefore the landscape is open and doesn't create sense of enclosure. The forest rises from the floor of the strath up the slope. Rosal Forest surrounds Rosal Clearance Village - one of the main visitor destinations in the north of Scotland. The well preserved remains of the buildings, walls and field systems, the location within Strath Naver with its traumatic and well documented history of clearances and the proximity to Bettyhill, where descendants of Rosal's inhabitants still live, makes the Clearance Village an important place. Each year sees many visitors from countries where some of the people of Rosal emigrated in 19<sup>th</sup> century. The part of Rosal Forest in FE's ownership suffered from extensive windblow damage in January 2015. There was significant effort to clear the damaged trees allowing for safe access to the Village, but given the age of the crop, clearfelling is unavoidable and will be carried out in two phases, 2017 – 2021 and 2022-2026. The detailed design of the restock sites around the Village will be consulted with FE's land architect at a work plan stage.



Rosal viewed from the western bank of River Naver, B873 public road.

Photo A.Baranska, NHFD

### 3.4.2 Visibility

The landscape sensitivity varies across the LMP area, offering both distant and close up, intimate views of the forest blocks. Majority of the forested area is located away from the population centres, with the exception of southern part of Dalchork, by Lairg. Dalchork is visible from A836 Laig to Altnaharra public road. Significant effort was made in the past to design visitor friendly forest edge – mix of open space and groups of trees offering

open and interesting views while traveling south towards Lairg. This design will be preserved by delayed felling, and, once felled, restocking within the footprint of former crop.



A well designed forest edge – Dalchork, visible from A836 traveling south towards Lairg.  
Photo A.Baranska, NHFD



Borgie forest visible from A836, traveling between Tongue and Bettyhill. Photo A.Baranska, NHFD

The winter storm in January 2015 caused extensive damage in all forest blocks covered by North Sutherland LMP. The unsightly damaged crop is visible to the members of the public traveling along A836 – an effort will be made to remove the windblown trees within the 1<sup>st</sup> phase of the Plan (2017 – 2021).



Dalchork: wind-damaged crop visible from A836 traveling north towards Altnaharra. Photo A.Baranska, NHFD

A836 between Altnaharra, Tongue and Bettyhill offers distant views of Borgie forest.

### 3.4.3 Neighbouring land use

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

- Productive forestry;
- Conservation;
- Tourism including outdoor pursuits, fieldsports and angling;
- Livestock agriculture
- Renewable energy developments, including wind farms.

## 3.5 Social factors

### 3.5.1 Recreation and access

Recreation across the Plan area has a relatively high profile. Each of the blocks covered by the North Sutherland LMP has a distinctive profile, with significant differences in visitor numbers. Borgie and southern part of Dalchork (close to Lairg) are used for recreational and dog walking purposes, while Rosal is visited mainly as a site of the Clearance Village. In addition many visitors come to enjoy the challenging hill walking and deer stalking available in Sutherland. 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.

The National Forest Estate is seeking to provide an appropriate backdrop for the outdoor activities, but also provides access facilities in the form of car parks, interpretation boards and forest trails of varying grades. The forest road network provides excellent opportunity for longer walks, cycling and horse riding. Formal facilities in this LMP area are as follows:

- Rosal walks and car park;
- Borgie log cabin, walks and car parks.



Borgie - The Unknown, looking towards Ben Loyall and Ben Hope. Photo A.Baranska, NHFD

The Unknown – a sculpture by Kenny Hunter - was placed in Borgie forest in 2014 and became a frequently visited and appreciated feature. Cooperation with North Sutherland Community Forestry Trust (NSCFT) has led to creation of the 'Gaelic Tree Alphabet' walk. Both of these features are popular with visitors and draw attention to the rich history of the area, its landscape and people. Borgie log cabins offer a great workshop/accommodation opportunities within a scenic location.



An entrance to the Gaelic Tree Alphabet Walk area, Borgie.

Photo A.Baranska, NHFD



Log cabin in Borgie. Photo A.Baranska, NHFD

### 3.5.2 Community

The LMP areas falls within the North-west and Central Sutherland Ward of the Highland Council Region and is represented by the following Community Councils (CCs):

- Bettyhill, Strathnaver and Altnaharra CC
- Tongue CC
- Lairg CC
- Rogart CC.

NHFD included the community councils in the consultation process and the replies, where received, are recorded in **Appendix III – Consultation record external**.

In addition, representatives of Bettyhill, Strathnaver and Altnaharra communities are involved in management of Borgie block.

### 3.6 Statutory requirements and key external policies

This Land Management Plan has been drafted to ensure that planning and operation functions will comply with the complex raft of legislation and policies that protect and enhance the Scottish Environment. **Appendixes I and II** contain further information on many of the guiding documents.

The Highland Council is currently (February 2016) reviewing core path network in Sutherland. The core path network aims to satisfy the basic need of local people and visitors for general access and recreation. It is designed to provide links to the wider path network throughout the Highland Council area. The network comprises a mixture of existing paths and new ones, located close to where people live. That range from tracks worn into natural ground (desire lines) to paths constructed to a high specification. The core paths cater for all types of users – walkers, cyclist, horse rider, and people with disabilities and are a key part of outdoor access provision. NHFD takes an active part in the HC's core path review. Please see **Map 4 – Analysis and Concept** for a currently approved core paths within the North Sutherland LMP forest blocks.



Forest road in Borgie – part of core path network in the Highland Council area. Photo A.Baranska, NHFD

## 4.0 Analysis and Concept

### 4.1 Analysis of Opportunities

The North Sutherland Land Management Plan has been produced in accordance with the UK Forestry Standard and the UK Woodland Assurance Scheme (UKWAS) guidelines.

The analysis and concept table in the following section is a culmination of the analysis of the key features identified in the previous sections and highlighted on the Key Features Maps (**Maps 2 & 3**). The analysis of the constraints and opportunities will focus on delivering the North Highland District Strategic Plan key commitments aiming at the publicly owned National Forest Estate to be:

- Healthy
- Productive
- Treasured
- Cared for
- Accessible
- Good value

The analysis and concept table identifies the relevant opportunities and constraints that are likely to be encountered during the implementation period of this plan and in the longer term. The key areas of this plan will be:

- To manage the productive areas of the forest to produce high quality timber and to manage more marginally productive areas to produce biomass at an economically viable scale and quantity.
- To maximise the diversity of tree species where climate and soils allow.
- Safeguard and improve designated species and habitats by peatland restoration and establishing native, riparian and successional woodlands. Where soil and climate allow, plant them in commercial densities to act as a productive forest comprising native species of broadleaf and conifer.
- Improve the environmental quality of the local water bodies by establishing a network of native broadleaves and open space in and around riparian areas through forest restructuring, planting and natural regeneration, thereby protecting and enhancing the conservation potential of the designated sites.

- To enhance habitats to make them suitable for freshwater pearl mussel, salmonids, otter, black grouse, breeding waders and black- and red-throated divers, and other species and allow them to flourish.

### 4.2 Concept Development

The design concept forms the broad spatial framework for the forest that will guide the detailed design (**see Map 4 Analysis and Concept**).

The overall aim of the plan is to create a forest that meets the priorities set out in the district strategic plan and addresses the local issues identified in the plan brief.

On full implementation of the plan, around 25% of the land will be managed for commercial timber production, ranging from biomass and local firewood production to providing sawlog material for processors through long term contracts.

About 15% of the area will be subject to peatland restoration process; just above 5% will be turned into native woodland, almost 6% into riparian woodland and almost 9% into successional woodland. Remaining area (about 40%) - open ground, including existing open peatland habitats, open water, ground open for archaeology and agricultural land (common grazing) in Rosal.



River Borgie. Photo A.Baranska, NHFD

The need to establish transitional habitats between open wetland environments and plantation edge will be key in developing a more diverse forest structure and will improve the visual quality of the forest.

Restoring key areas to native and successional woodland and natural reserve from conifer plantation and enhancing the condition of existing open and riparian habitats will improve the forest's ability to adapt to climate change and provide suitable habitat for important protected animal species.

The plan proposes woodland removal on specified soil types and as this is associated with internal re-design 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"*

The rationale for habitat type is given in **Section 6.4 – Management Prescription Types**. Species will be matched to site following detailed soil survey in each compartment, as land form is revealed after clearfell. North Highland FD believes this to be best silvicultural practice and the most suitable way to achieve sustainability in future rotations.

Future habitat management is therefore logically proposed and mapped using a zoning method that indicates where each zone will be located.

The extended (generally up to five years) fallow periods that are required prior to restocking, to allow pine weevil populations to abate, have the negative effect of compounding nutrient deficit because nutrient released from decaying leaf litter will largely have been flushed from site by year five. It is anticipated that post planting applications of fertiliser will be required on the upper margins of the forest and remedial applications may be required in some crops in line with industry best practice (Taylor, 1991), however appropriate choice of silvicultural mixtures and well-timed heather control will be preferred to fertiliser.

Felling will generally exceed restocking within any five year period due to the practice of fallow and the inclusion of peatland restoration and higher levels of internal open space through restructuring. Improved site to species selection will maintain productivity in future rotations. The planning system adopted by NHFD to ensure that silviculturally appropriate species are planted is as follows:

Coupe planning visit takes place when felling has reached 75% of area to identify any felling boundary issues, discuss landform, climate and soils and identify suitable species for the next rotation. This meeting is attended by staff from Planning, Operations, Environment, Deer Management and Stewardship and is called the '75% Meeting'. Outcomes are recorded in the coupe workplan.



Three years prior to restocking the Programme Manager chairs a site objectives meeting with the Planning Manager, Planning Forester, Environment Manager and FM Forester and uses the workplan to create appropriate planting stock orders for the coupe and this order is entered into the FD Business Plan by the FM Forester.



Once the restocking operation has taken place the Operations Forester passes the coupe restock details to the FD GIS Technician who then updates the Sub Compartment Database. The GIS Technician then informs the Design Planning Forester of completion.



The FD Design Planning forester then undertakes a site visit to confirm that the restock operation complies with the Land Management Plan objectives and design prior to review of the plan.

#### 4.3 Analysis and Concept Table

Factor	Opportunity	Constraint	Concept Development
Climate and soils	Identification of soils capable of supporting productive crops will allow improved silviculture in the next rotation. Stratification of sites based on growing potential will allow biomass crops to be targeted to more marginal sites and higher silvicultural inputs to be concentrated on areas of higher potential.	The less fertile organic soils, adjacency to the designated and undesignated active and recovering peatland habitats, and the exposed nature of much of the North Sutherland LMP area will limit the choice of suitable species for the establishment of productive woodland.	Use site soil and climate conditions at coupe level to indicate future management prescription and species at a scale which is silviculturally appropriate. Use the Ecological Site Classification Support System to assist in correct species choice/management prescriptions. Continue to introduce site improving species such as Birch as an element of productive conifer sites.
Pests and Diseases	Areas with significant wind damage and those infected by Dothistroma Needle Blight (DNB) will be targeted for removal early in the Plan. An increase in species diversity will improve the ability of the forest to withstand attack from pathogens now spreading toward or across North Scotland.	The current spread of Dothistroma Needle Blight (DNB), the spread of Chalara (Ash Dieback) to the central Highlands and the continued identification of Phytophthora all continue to constrain species choice for planting and affect felling programmes. Lodgepole pine is an important productive species across the area and is particularly vulnerable to current pathogens.	Prioritise felling of the most significant areas of windblow and DNB affected crops. The FD will continue to play a leading role in the development and application of best practice in relation to DNB and will undertake monitoring of tree health routinely in line with FCS policy. In addition local staff will continue to be updated through training events and local communications meetings.
Forest structure	The successful establishment of current restock sites will allow continued improvement of age structure diversity. The development of native, successional and riparian woodland on appropriate sites will add to age class diversity.	The restructuring programme is a long term objective so changes in age structure will inevitably only happen over a period in excess of 50 – 100 years. The windblow suffered in recent years has compromised the forest structure for the current rotation.	Accept the need to fell some areas prematurely in order to establish more sympathetic felling order (against prevailing wind) and more wind firm coupes in next rotation. Use watercourses, roads, existing and designed open ground as natural coupe boundaries, allowing for development of wind resistant edge trees and as a consequence more resilient coupes. Extend the rotation of coupes where climate and soils allow, to increase age class structure, while improving timber quality. Ensure areas of natural reserve are correctly identified to increase age diversity.
Hydrology	Remove riparian conifer and slow down run-off by restoring a mosaic of riparian woodland/open space and adopting low impact ground preparation techniques. Adopt current silvicultural best practice using nursing mixtures where possible to reduce reliance on fertilisers and ensure fertiliser applications in other areas follow best practice. Avoid intensive drainage regimes on the organic soils. Opportunity to significantly enhance riparian habitat to the benefit of freshwater pearl mussels, salmon and trout.	Forestry is one factor that could contribute to an increase in phosphorous levels and siltation, in addition to the effects of natural processes.  Inappropriate cultivation of organic soils could cause deterioration in hydrology that will lead to oxidation of peat, with consequent carbon and methane release.	Follow best practice, adopt riparian woodland buffer zone widths of no less than 30metres from each bank for more significant watercourses and avoid unnecessary fertiliser applications. Promote silvicultural nurse mixtures. Plant riparian native woodland where regen is unlikely and dedicate this as natural reserve at an appropriate stage. Create substantial open peatland/riparian and successional woodland buffer around Loch Beannach DWPA to ensure that future forest operations will not negatively impact on

			<p>water quality and/or yield.</p> <p>Restore peatland habitat on sites adjacent to designated peatland sites and where such restoration is likely to be successful and will benefit the hydrology of the area.</p>
Timber recovery	<p>The opportunity to increase timber quality – with particular emphasis on conifers on workable sites – can increase productivity and income.</p> <p>Where current non-native species are compromising biodiversity aims, remove the crops as early as possible.</p>	<p>Extensive areas of winblown and/or DNB affected crops with quickly deteriorating timber. Stability of crops that miss their thinning windows could be compromised and the marginal economics of thinning could mean that budget constraints affect programmes.</p>	<p>Prioritise higher value windblown coupes while deciding of the timing of felling. Ensure thinning interventions are undertaken on time and that best silvicultural practice is a high business plan priority.</p>
Biodiversity	<p>Opportunity to increase species diversity by introducing native broadleaf species – particularly riparian woodland providing dappled shade - as future seed source. Provide better linkage with neighbouring designated sites.</p> <p>Protect the designated species and enhance the riparian habitat capable of improving the aquatic environment for fresh water pearl mussels, salmon and trout.</p>	<p>Control of deer populations will be key to the establishment of sensitive broadleaf species and maintaining of deer fences will be required.</p> <p>Riparian native woodland establishment could have locally negative effects on feature species if done inappropriately (e.g. water vole and otter).</p>	<p>Targeted deer culls and the maintenance of external deer fencing will be employed to assist in establishing sensitive species and native or riparian woodland. Deer fencing will be monitored and will be removed where appropriate. We will work closely with neighbours and stakeholders to ensure best practice is adopted and fencelines are planned and managed at a landscape scale appropriate to deer management.</p> <p>Appropriate low impact establishment techniques will be used to establish riparian woodland. Pre ops surveys by environment staff and FES ecologists will inform precise siting of native woodland and bog woodland planting. Peatland restoration on deep peat sites adjacent to designated peatland sites, undesignated active bog and recovering peatland will improve the bog hydrology and will lead to improved habitat linkage and condition for bog land flora and fauna.</p> <p>Forest and Water Guidance will be adhered to and every effort will be made to ensure that forest operations don't have negative impact on watercourses.</p>
Open habitats	<p>To improve the quality of blanket bog habitats where they are encountered.</p> <p>To include open space in native woodland and productive woodland to increase forest structure diversity.</p>	<p>Open habitats may be impacted on by regeneration.</p> <p>Organic soils may be damaged by inappropriate establishment operations that affect hydrology.</p>	<p>Use buffer zones and transition habitat to reduce the risk of unwanted regeneration. Avoid silviculturally inappropriate restocking practices.</p> <p>Consult with stakeholders and maintain designated site plans to ensure that all operations are appropriate to designated species and habitats.</p>

Native woodland	<p>Opportunity to increase species diversity in riparian zones.</p> <p>Opportunity to contribute to national targets for natural reserve by the establishment of minimum intervention native woodland.</p>	<p>Planting opportunity will be partially limited due to extent of open ground priority habitats and unsuitable planting ground (blanket bog).</p> <p>Significant deer populations may cause difficulties during the establishment phase.</p>	<p>Continue to follow best practice deer management. Adhere to deadwood policy.</p> <p>Create native woodland in line with current best practice, ensuring species appropriate to site are used and that structure will benefit designated species.</p>
Designated Habitats and Species	<p>Sustain and enhance the quality of habitat to encourage species and sites noted in this plan.</p> <p>Opportunity to demonstrate exemplar management of a diverse range of habitats.</p>	<p>Competing priorities could lead to an imbalance in a habitat favourable for all species. Recolonisation of open ground habitats by non-native conifers may compromise objectives.</p> <p>Rise in predator populations may compromise conservation efforts.</p> <p>Forest pathogens affecting important tree species such as larch, juniper, ash and scots pine may threaten the habitats of key species.</p> <p>Large scale clearfell or removal of future deadwood may compromise species habitat.</p>	<p>Develop internal structure to allow greater age class diversity in future rotations, providing increased habitat diversity. Increase native habitat connectivity to benefit species diversity. Ensure that appropriate survey and monitoring is undertaken. Monitor regen on open ground sites.</p> <p>Monitor forest health and continue to contribute to research and the development of disease management best practice.</p>
Historic features / archaeology	<p>Opportunity to integrate historical features into the open area habitat network.</p> <p>Opportunity to establish new heritage management practices such as grazing and burning where permission from Historic Scotland now exists.</p>	<p>Improvements are likely to be achieved over the longer term as the forest is restructured.</p>	<p>Consider historical features when designing open habitat network and planning restock operations. Refer new finds to the FCS archaeologist. Ensure that all sites are surveyed and results fed into the workplan.</p> <p>Ensure that all scheduled monuments have a current SAM plan and that the work suggested is delivered.</p>
Recreation and Access	<p>Opportunity for formal and low key access. Good infrastructure and facilities for tourists and local users. Improve visual diversity and landscape quality.</p> <p>Opportunity to enhance the landscape around existing RoW and Core Path network.</p> <p>Opportunity to create a wider access network with minimal investment using existing forest roads.</p>	<p>Funding and resources will inevitably create a constraint to further development of facilities. Lack of longer trails and marketing budget may constrain user numbers.</p> <p>Forest operations can create conflict with forest users where sites are closed for Health and Safety reasons.</p> <p>Many access points – formal and informal – exist across this extensive LMP area and some may not be fit for purpose.</p> <p>Antisocial behaviour – motorbike use, litter, dog disturbance and unauthorised trail building will compromise conservation objectives and disturb other forest users.</p>	<p>Build on established links with local providers to encourage use of the sites.</p> <p>Continue to improve existing facilities as resources allow.</p> <p>Continue to improve path corridors by appropriate 'visitor zoning' operations.</p> <p>Work with the Highland Council Access Officer, Police Scotland, Community Councils and local residents/landowners to explore potential access linkage, limit anti-social use and encourage access by all.</p>

Landscape	<p>Through peatland restoration programme, well designed coupe shapes and use of a greater diversity of species, the landscape impact of the forest could be significantly improved.</p> <p>The establishment of successional woodlands will lead to a more organic transition from high forest to blanket bog habitats.</p>	<p>Deer pressure may limit the successful establishment of the native, riparian and successional woodland (more palatable species).</p> <p>Extent of winblow and forest health issues may mean coupe shapes are re-designed to recover deteriorating timber rather than improve landscape.</p> <p>Crops on very sensitive soils may be left after harvesting if operations become uneconomic creating unsightly blocks.</p>	<p>Effective deer control, by a variety of techniques, will be adopted to allow the establishment of sensitive species and native/riparian woodlands beyond browsing height and will then be reviewed at the end of the plan period.</p> <p>A pragmatic approach to coupe shapes will be taken if winblow or disease dictates early felling.</p> <p>Accurate stratification of crops before marketing will allow harvesting to achieve full clearance of sites.</p>
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The analysis and concepts can be viewed spatially in **Map 4** of this plan and the perspective visualisations are provided.

# North Sutherland

**Land Management Plan 2016 - 2026**

**Plan Brief**

# Plan Brief

## Background information

This LMP is a full revision of management proposals for an area previously covered by three separate Forest Design Plans (FDPs): Dalchork (2009 – 2019), Strathnaver (2001 – 2011) and Borgie (2011 – 2021). The forest blocks mentioned above are located in North Sutherland, north from Lairg, and cover area of approximately 14258 ha. Following the recent sale of majority of Rosal forest block, North Highland Forest District currently manages area of about 160 ha, including the clearance village of Rosal.

Proximity to important European designated sites, like Caithness and Sutherland Peatlands Special Protection Area (SPA) and Special Area of Conservation (SAC), River Borgie SAC, River Naver SAC, Strath Carnaig and Straht Fleet Moors SPA, numerous Sites of Special Scientific Interest (SSSI) and Wild Land Areas means that water quality and conservation of protected species and habitats are the main drivers behind the LMP proposals.

## Strategic influence

The management of National Forest Estate is guided by The Role of National Forest Estate and Strategic Directions document (2013), which identifies six key aspirations for the publicly owned forests:

- **Healthy:** achieving good environmental and silvicultural condition in a changing climate;
- **Productive:** providing sustainable economic benefits from the land;
- **Treasured:** as a multi-purpose resource that sustains livelihoods, improves quality of life and offers involvement and enjoyment;
- **Accessible:** local woodlands and national treasures that are well promoted, welcoming and open for all;
- **Cared for:** working with nature, respecting landscape, natural and cultural heritage;
- **Good value:** exemplary, efficient and effective delivery of public benefits.

Drawing on these key themes North Highland Forest District (NHFD) prepared a three year District Strategic Plan, setting out a vision, priorities and objectives in the spirit of which the

North Highland FD Land Management Plans are prepared. Aims and objectives of North Sutherland Land Management Plan were developed on the basis of National Forest Estate key aspirations and NHFD's commitments set in the District Strategic Plan (2014 – 2017).

## Vision

Well managed productive forests that complement the scenic landscape of North Sutherland, with extensive areas of native habitats linked with adjacent designated sites, supporting populations of protected species and contributing positively to the water quality within the wider area.

## Aims

- To restore valuable peatland areas and create network of riparian and native woodland.
- To manage the forests in a manner that positively contributes to water quality, with a special emphasis on watercourses supporting populations of fresh water pearl mussels and salmon.
- To manage the forests sympathetically to the landscape in order to improve their appearance and overall visitor experience.
- To optimise productive potential of the forests by creating resilient forest structure and minimising wind damage.
- To sustain timber production at a level that supports local economy and wider timber industry.
- To support local communities that are currently involved in management of their local forests, be open to working in partnership and encourage and support any new approaches.
- To contribute to climate change mitigation measures by restoring and protecting active bogs, maintaining sustainable timber production, creating areas of new woodland and facilitating woodfuel and renewable energy production.

The table below outlines the strategic aims, objectives and details how progress against these targets will be monitored.

Aim	Objective	Monitoring
<p><b>To restore valuable peatland areas and create network of riparian and native woodland.</b></p>	<ul style="list-style-type: none"> <li>Identify afforested deep peat sites with the greatest conservation potential; secure their long term viability by woodland removal, drain and furrow blocking, and creating protective broadleaf woodland buffer (peatland edge woodland) between open peatland and productive woodland.</li> <li>Provide habitat linkage between Caithness and Sutherland Peatlands SPA &amp; SAC and Strath Carnaig and Strath Fleet Moors SPA &amp; SAC in order to favour open habitat designated species.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the felling proposals will be reviewed annually through the delivery of harvesting programme and formally at LMP's 5 years review and 10 years revision</li> <li>Core peatland restoration areas will be monitored regularly to assess the presence of peat creating vegetation (mainly <i>Sphagnum species</i>) and water table level.</li> <li>Implementation of the future habitat proposals will be monitored annually through the restock programme and formally at LMP's 5 years review and 10 years revision</li> </ul>
	<ul style="list-style-type: none"> <li>Establish riparian woodland along major watercourses and native woodland at the forest blocks' boundaries and where it is likely to secure environmental benefit and/or improve the overall management.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the future habitat proposals will be monitored annually through the restock programme and formally at LMP's 5 years review and 10 years revision.</li> </ul>
	<ul style="list-style-type: none"> <li>Work with Scotland's Environmental and Rural Services and our neighbours to develop a sustainable, landscape scale approach to deer management and promote National Forest Estate (NFE) as an exemplar of best practice.</li> </ul>	<ul style="list-style-type: none"> <li>Deer management will be monitored and reported on using existing FCS deer management protocols.</li> </ul>
<p><b>To manage the forests in a manner that positively contributes to water quality, with a special emphasis on watercourses supporting populations of fresh water pearl mussels and salmon.</b></p>	<ul style="list-style-type: none"> <li>Increase area of riparian woodland along Rivers: Borgie, Naver, Tirry and their tributaries .</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the future habitat proposals will be monitored annually through the restock programme and formally at LMP's 5 years review and 10 years revision</li> </ul>
	<ul style="list-style-type: none"> <li>Protect the integrity of all watercourses during management operations and into long term by applying measures outlined in forest and water guidance.</li> </ul>	<ul style="list-style-type: none"> <li>Special measures will be identified through work plan process and will be monitored through good site management and 75% site visits* .</li> </ul>
	<ul style="list-style-type: none"> <li>Work in partnership with organisations such as Fisheries Board and SEPA to understand the influence of forest operations on the condition of watercourses within the area.</li> </ul>	<ul style="list-style-type: none"> <li>On-going process lead by the Environment and Planning teams. Progress will be reviewed formally at LMP's 5 years review and 10 years revision.</li> </ul>

<p><b>To manage the forests sympathetically to the landscape in order to improve their appearance and overall visitor experience.</b></p>	<ul style="list-style-type: none"> <li>Implement LMP felling and restocking proposals designed in liaison with the FCS landscape architect.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the felling and future habitat proposals will be monitored annually through the restock programme and formally at LMP's 5 years review and 10 years revision.</li> </ul>
	<ul style="list-style-type: none"> <li>Remove wind damaged crops, prioritising highly used tourist routes and areas of ecological importance.</li> </ul>	<ul style="list-style-type: none"> <li>Delivery will be monitored through annual work programmes and formally at LMP's 5 years review and 10 years revision.</li> </ul>
	<ul style="list-style-type: none"> <li>Maintain the level of public access to the forests within the LMP area by maintaining and/or improving visitor facilities and providing diversions and/or alternative access routes during forest operations.</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining level of public access during forest operations will be monitored through the work plan process, good site management and 75% site visits.</li> <li>Visitor facilities will be monitored by CRT team and reported on using existing CRT protocols. Facilities will be maintained and/or replaced as required.</li> </ul>
<p><b>To optimise productive potential of the forests by creating resilient forest structure and minimising wind damage.</b></p>	<ul style="list-style-type: none"> <li>Create wind-firm coupes using watercourses, changes in landform, forest roads and areas of open land as boundaries allowing for development of wind resistant edge trees and improving overall crop resilience.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the felling and future habitat proposals will be monitored annually through the restock programme and formally at LMP's 5 years review and 10 years revision.</li> </ul>
<p><b>To sustain timber production at a level that supports local economy and wider timber industry.</b></p>	<ul style="list-style-type: none"> <li>Concentrate productive conifers on appropriate soils using species best suited to site conditions; apply best silvicultural practice to improve quality and yields of our commercial conifer timber.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the general future habitat proposals will be monitored formally at LMP's 5 years review and 10 years revision. Detailed restock proposals will be developed post-felling, during the work plan process and 75% site visit and will be monitored annually through restock programme.</li> </ul>
<p><b>To support local communities that are currently involved in management of their local forests, be open to working in partnership and encourage and support any new approaches.</b></p>	<ul style="list-style-type: none"> <li>Contact local Community Councils and local interest groups within the LMP area in order to develop management approach that reflects their aspirations and secures benefits to the local residents and forest users.</li> </ul>	<ul style="list-style-type: none"> <li>Contact with Community Councils and local interest groups will be recorded by LMP Forester and monitored formally at LMP's 5 years review and 10 years revision.</li> </ul>

<p><b>To contribute to climate change mitigation measures by restoring and protecting active bogs, maintaining sustainable timber production, creating areas of new woodland and facilitating woodfuel and renewable energy production.</b></p>	<ul style="list-style-type: none"> <li>Adopt our management as information develops on carbon sequestration with particular emphasis on preserving organic soils and matching the most productive tree species to the best sites.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the general future habitat proposals will be monitored formally at LMP's 5 years review and 10 years revision. Detailed restock proposals will be developed post-felling, during the workplan process and 75% site visit and will be monitored annually through restock programme.</li> <li>Areas subjected to peatland restoration will be monitored by Environment team.</li> </ul>
	<ul style="list-style-type: none"> <li>Diversify age structure and species composition of our forests making use of silvicultural mixtures and disease resistant species to increase resilience to pathogens and climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the general future habitat proposals will be monitored formally at LMP's 5 years review and 10 years revision. Detailed restock proposals will be developed post-felling, during the workplan process and 75% site visit and will be monitored annually through restock programme.</li> <li>Areas affected by <i>Dothistroma needle blight</i> (DNB) will be monitored annually by Planning team and if needed, felled early to maximise timber recovery.</li> </ul>
	<ul style="list-style-type: none"> <li>Continue to support the development of local timber and woodfuel businesses and seek out new outlets for small roundwood to help reduce timber miles.</li> </ul>	<ul style="list-style-type: none"> <li>The production forecast will be produced by Planning team; volumes might fluctuate as forest health felling and windblow clearance will need to be accommodated. The forecast will be monitored by Programme Manager and Planning Manager.</li> </ul>
	<ul style="list-style-type: none"> <li>Continue to make the land within the National Forest Estate available to development of renewable energy generation schemes, and to work with developers to deliver projects of maximal environmental and economic benefit.</li> </ul>	<ul style="list-style-type: none"> <li>The possible change in land use will be monitored by Planning and Estate teams respectively.</li> </ul>

\***75% site visit** is carried out at a point when about 75% of a harvesting coupe is felled and is attended by representatives of District teams (Harvesting, Forest Management, Planning, Environment, CRT, Deer Management and Civil Engineers); at this point restock proposal (as per FDP/LMP) is discussed and decision about future species composition is made. Other site specific issues (e.g. water management, protected species, landscape etc.) are also discussed. Decisions made during 75% site visit are recorded in work plan document.

## 5.0 Summary of proposals

### 5.1 Forest management

The North Sutherland Land Management Plan has been produced in accordance with the UK Woodland Assurance Scheme (UKWAS) guidelines and the UK Forestry Standard. The overall aim of the plan is to maintain productive capacity, with species matched to appropriate sites, whilst protecting designated species and sites, restoring peatland habitat and create/expand native woodland and riparian habitat. Water quality management is acknowledged as one of the main LMP objectives.

Section 6.2 – Coupe Summary details areas to be restocked, new planting areas and the forecast of timber volumes and areas to be clearfelled in the first 2 plan phases. This information can be viewed spatially on **Map 5 – Management coupes**, **Map 6 – Future habitats**, **Map 7 – Planned operations (Felling and road construction)**, **Map 7 – planned operation (Restocking)** and **Map 8 – New planting**.

#### 5.1.1 Clear felling

The North Sutherland LMP area has been site of some significant clearfelling, beyond the restructuring and/or peatland restoration objectives set by previous Forest Design Plan (FDPs), primarily due to wind damage and forest health issues (*Dothistroma Needle Blight*). The forests within the LMP area are producing biomass and woodfuel, but there are areas capable of producing good quality softwood. The scope for producing hardwood is minimal; the proposed significant increase in area planted with broadleaves will provide more environmental than commercial benefits, as they will be planted in lower densities and maintained as native and/or riparian woodland, with some potential for producing fire wood. The majority of clearfell over the next ten years will be driven by an attempt to maximise timber recovery on sites affected by wind damage (January 2015) and DNB, and by restructuring – mainly peatland restoration.



Crop badly affected by both DNB and wind damage, Dalchork. Photo A.Baranska, NHFD

Timber production from the plan area will consist of a wide variety of timber grades from Lodgepole pine crops, suitable for wood fuel and specific export markets to green sawlogs from Sitka spruce and Scots pine. Maximising production will be balanced with the need to protect the soils and hydrology on sensitive sites. Clearfell will be undertaken using harvester – forwarder systems on a standing sales basis. Due to the very nature of the peat soils and the damage caused by both windblow and DNB, some of the crops on very wet sites might not be recovered, leading to creation of deadwood habitats zones, extent of which is difficult to predict prior to the commence of harvesting operations.

#### 5.1.2. Thinning

Forest health issues (DNB) and a need to absorb significant extra volume following windblow events in 2006 and 2015 had an impact on the thinning programme across the District. The need to prioritise recovery of valuable timber means that some of the thinning might get delayed or even abandoned. Opportunities to thin crop across the LMP area are limited by soil conditions and exposure. However there are areas where thinning might and should be undertaken and it is one of objectives of this plan to identify the most productive areas and to use available resources to maximise the silvicultural potential of every productive coupe. In such areas intermediate (selective) thinning will be undertaken, at a rate that generally does not exceed marginal thinning intensity. Heavier thinning might be carried out where other objectives are to be delivered (e.g. conservation of habitats or species, visitor zoning etc.)

#### 5.1.3 LISS

Low impact silvicultural systems (LISS), also referred to as continuous cover forestry (CCF) will not be used across the North Sutherland LMP area for reasons detailed in background information (mainly soils, exposure, excess of wind inflicted damage and DNB).

#### 5.1.4 New planting

Across the LMP area planting of native broadleaf species will be carried out along watercourses to create riparian woodland and improve aquatic environment. This kind of planting will be undertaken within the footprint of existing forest (where conifers were planted right to the banks of watercourses and subsequently felled) and on previously open ground (where previous rotation crop was kept away from the watercourses). Timing will depend on restocking of adjacent coupes and/or available funds.

Two areas (Dalchork) have been identified as suitable for new woodland creation. One (agricultural ground) is suitable for native woodland and will be planted with native tree and shrub species.

The other area is an open ground between A836 public road and existing conifer shelterbelts planted in 1980s (northern boundary of Dalchork). The need to carry out planting along A836 was identified during the consultation process, when the proposal to clearfell the struggling conifers without restocking met with a request from the local residents to have the area replanted on the ground that the shelterbelts are vital in preventing snow accumulation and keeping the public road open during the winter. To

maintain the sheltering function of the existing roadside strips, we propose to plant few rows of broadleaves between them and the public road (within this plan period) and, once the trees are established, to clearfell the conifers and restock the area with native species (outside the plan period). The proposed new planting area is cut away from surrounding peatland by the presence of conifer shelterbelts, and heavily modified due to engineering works carried within and next to the existing roadline. The peat depth within the area in places exceeds 0.7m (please see Peat depth survey results - A936 map for details) – as the UK Forestry Standard recommends avoiding establishing new forests on soils where peat depth exceeds 0.5, we will avoid such areas as long as it doesn't compromise the future function of the shelterbelts. We believe that the requirements of the local community and the above mentioned site conditions justify the planting proposal.

Few areas in Borgie (south of the existing forest) has been identified as possible area of woodland expansion (please see Map 4 – Analysis and concept, for details). As these are located in area of significant peat accumulation and high grazing pressure from deer population, and where exposure is a limiting factor, we propose to establish native tree and shrub species (mainly willows) in small (5mx5m) exclosures as future seed source allowing for natural regeneration and creation of low density native treeline woodland. Given the complexity of the site, within the next 10 years we will focus mainly on survey work to identify suitable microsites where the exclosures can be located, avoiding deep peat and priority habitats. Finding suitable seed source of native mountain willow species and securing planting material will also be challenging, therefore no planting as such is envisaged within this plan period. Proposed new planting areas can be viewed spatially on **Map 4 – Analysis and concept**, and **Map 8 – New planting**.

## 5.2. Future habitats and species

With the exception of poorest, wettest soils, the forest across the LMP area are capable of growing timber crop of varied quality, from biomass to construction timber. However, due to the extent of deep peat (mainly Dalchork), adjacency to designated peatland sites and questionable carbon balance and economics of growing of low yield class crops on peat, the area available for producing softwood will be significantly reduced, allowing for peatland restoration and creation of native and successional woodland. Where it is possible, without compromising delivery of higher priorities, productive conifer will form the main component of the forest. **Section 6.5 – Productive Forestry Prescriptions** details the species that are suitable for each site type identified across the plan area and this will form the basis for discussion at each coupe 75% meeting.

During the plan period there will be a concerted effort to enhance and expand the native woodland component of the forest. In general, broadleaf woodland will be concentrated in both current and newly created riparian zones and in native woodland zones, however broadleaved species will be encouraged throughout the entire forest (with a special focus on successional woodland zone) by retaining regeneration and establishing new seed sources by planting.

All native woodland establishment will be designed and delivered within the current FCS guidelines (Rodwell & Paterson, 1994). Planting operations will be aimed at encouraging a suitable National Vegetation Classification (NVC) woodland type appropriate to the soils and indicator vegetation encountered on site. This will be identified subsequent to harvesting operations and will generally adhere to FD fallow policy.

The restoration of riparian woodland will increase internal open space, fragmenting productive blocks, increasing forest edge habitat and allowing a windfirm network of permanent habitat corridors to develop. This in turn will allow greater age class diversity in future rotations by providing a 'framework' within which reduced coupe sizes can be managed. Current climate change predictions under all climate change scenarios indicate that freshwater biota may become threatened by increases in summer temperatures and altered river flows resulting from increased precipitation. Salmonids in particular are susceptible to temperature changes (Broadmeadow, 2002). In addition soil erosion may be exacerbated by increased flood and drought cycles. The increase in dappled shade and soil stability provided by broadleaf riparian woodland will help to protect river ecosystems from the predicted temperature fluctuations predicted to result from climate change.



Potential riparian woodland zone, Dalchork. Photo A.Baranska, NHFD

Deadwood is acknowledged as a very important element of the forest ecosystem, positively effecting biodiversity, carbon storage, soil nutrient cycling, energy flows, hydrological processes and natural regeneration. Guidelines (FC E&C, 2002) on proportions and types of deadwood will be adhered to and the position and type of deadwood required will be agreed pre-commencement on harvesting operations and reviewed at each coupe 75% meeting. Deadwood plays a vital role in the functioning of

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river ecosystems (FC E&C, 2002). Dedicating riparian woodland as natural reserve will encourage a high proportion of deadwood over time, performing the following functions:

- Helping to retain water and sediments.
- Trapping and facilitating the breakdown of organic matter into food for aquatic invertebrates.
- Diversifying channels by creating pools, falls and riffles.
- Improving physical habitat structure for fish and invertebrates.

### 5.3 Restructuring

Forest restructuring efforts within the plan period will be driven by maximising timber recovery from crops affected by wind damage and/or Dothistroma Needle Blight and by peatland restoration. Although the extent of wind damage across the LMP area, and the scale of previous DNB and windblow related felling means that there is relatively small scope for designing felling coupes, the restock coupes are designed to be more wind firm by utilising watercourses, roads, landform, existing and created open spaces as natural boundaries. Given the scale of the task it needs to be accepted that this might not be achieved within the next rotation, but will allow for both structural diversity and will reduce the risk of catastrophic windblow in subsequent rotations.

5 year fallow period between felling and restocking is adopted across the District to allow a natural reduction in *Hylobius* populations. Population monitoring will be carried out prior to restocking in order to ascertain population levels as a means to reducing the use of insecticide applications during the establishment phase.

The preferred means of dealing with any adjacency issues will be through delayed felling, i.e. a coupe will not be felled until all surrounding crops are at least 2m tall. All the forest blocks within the North Sutherland LMP suffered from wind damage and as a result extensive areas are proposed to be felled within next 10 years. As delaying felling of those windblown areas isn't an acceptable option (from the economic and landscape point of view), delaying of restocking is the only opportunity left to create any age diversity (although on a very limited scale). In addition, the anticipated rise in *Hylobius* population (it has happen in Benmore, following big scale DNB-related harvesting) is a big concern. Given the drive to minimise the use of pesticides on NFE, delaying of restock operations might be an only realistic option to establish next generation of trees. Where and when this happens, and outside tolerance limits agreed with FCS, an approval from FCS will be sought to deal with adjacency issues through delayed restocking. Please see section **6.3 – Tolerance Table** for more details.

The overall area of productive woodland will be significantly reduced during the life of the plan through the removal of plantation from peatland and riparian sites. Restocking in productive

areas will aim to maximise the productive capacity of the forest, the brief guidelines below will be followed to ensure adequate restocking:

- To obtain maximum benefits from restructuring, restocking areas will not be less than 3ha per individual shape or exceed 50ha unless forest health issues or windblow dictate otherwise.
- Restock coupes adjacent to the forest road network should be restocked to within a short distance of the forest road for at least 30% of the coupe frontage for future access.
- Non - productive broadleaf elements within productive coupes should be located where they will be of greatest benefit; in riparian zones, adjacent to open ground, other broadleaf woodland or around archaeological features to enhance the setting.
- Commercial restocking will not be undertaken on soil types 9e, 11c, 11d due to the intensive drainage regimes and high fertiliser inputs required.

Proposed restock areas can be viewed spatially on **Map 7 – CSM6 Planned operations (restocking)**. The LMP proposal seeks approval for restocking of areas felled prior to plan approval and those felled within the 1<sup>st</sup> 5 years from the date of approval. The District's applies a 5 year fallow period, which generally means that all coupes felled in 2<sup>nd</sup> phase of the plan are restocked outside the approved plan period. In order to secure approval for restocking of coupes felled in 2<sup>nd</sup> 5 year phase of the plan, if shorter fallow period is applied, proposed areas of 2<sup>nd</sup> phase restock are also shown on **Map 7 – CSM6 Planned Operations (restocking)**.

#### 5.3.1 Peatland restoration

North Highland Forest District has significant areas of afforested deep peat. Future management decisions regarding these areas are based on current UKFS requirements, The Scottish Government's Policy on Control of Woodland Removal, and the recently published FCS Practice Guide 'Deciding future management options for afforested deep peatland'. Peat depth survey results, hydrological connectivity with surrounding active bogs, adjacency to designated peatland sites, current crop yield class data (taking into account the intensity of cultivation and amount of fertiliser used previously to achieve acceptable rate of growth), crop stability and general site condition (water table level, presence of *Sphagnum* moss etc.) were taken into account while deciding on the future management options.

Where deep peat coupes have the potential to be turned into net carbon sink, contribute significantly to biodiversity and hydrology interest of adjacent peatland sites, and there is a good chance of restoration being successful, we will undertake works to block drains and furrows and remove regenerating non-native species, so that blanket bog can be restored. Significant areas of currently forested ground in Dalchork will be clearfelled and restored to open bog, to achieve the benefits mentioned above.



Dalchork - afforested deep peat adjacent to active bog will be subjected to peatland restoration.  
Photo A.Baranska, NHFD

On less important deep peat sites, where we judge that the peat cannot be restored effectively (due to level of damage caused by 1<sup>st</sup> rotation) and where we can't expect the rate of tree growth to be sufficient to maintain positive carbon balance if restocked with conifers at commercial density, we will aim to promote wet woodland, comprising natural regeneration of tree species present on adjacent sites (mainly non-native conifers and Downy birch) and native species planted at low densities, with a projected canopy cover of around 20%. This will eventually form a permanent ecotone between bog and productive woodland – successional woodland.

We are currently developing a decision support rational with Environmental Research Institute in Thurso to help us identify the most suitable sites for restoration of blanket bog and wet woodland. In addition we will fully support the work of the Flow Country Science Group in evaluating the efficacy of current mitigation measures on peatland species and hydrology so that future management reflects actual experience rather than models.

#### 5.4 Management of open land

The management of open land is detailed in chapter **6.4 – Management Prescription Types** and is visualised in **Map 6 – Future Habitats**.

We recognise the valuable ecosystem services that are provided by open land and in particular active ombrotrophic mire systems such as blanket bog. The benefits include carbon and methane storage, water quality improvement, reduced flooding risks and increased biodiversity. Blanket bog restoration or enhancement will be undertaken in areas where hydrological connectivity can be assessed as having an effect on intact active blanket bog, on designated sites where blanket bog or it's associated species are the notified features or where we believe that

topography will allow full restoration to active bog at a scale that will achieve the benefits noted above.



Oblong-leaved sundew and *Sphagnum* mosses on active bog site, Dalchork.  
Photo A.Baranska, NHFD

Where suitable open habitat frames watercourses we will plant native broadleaves adjacent to watercourses to improve aquatic habitat quality, as per section **6.4 – Management prescriptions**, avoiding sensitive species and habitats.



Dalchork - Birch and Rowan growing along a watercourse. Potential riparian woodland zone.  
Photo A.Baranska, NHFD

## 5.5 Deer Management

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. All proposals and operations are tested against the criteria contained in the Joint Agency Statement on Deer 2004.

The strategy and Code of Practice takes recognition of the fact that Wild deer are an asset, and integral part of Scotland's biodiversity and provide healthy food and recreational opportunities. The challenge of managing wild deer originates in a need to balance the environmental, economic and deer welfare objectives of the Scottish nation with the objectives of private landowners for forestry, agriculture, sporting and other forms of land use.

The principal legislation governing the management of deer in Scotland and hence on the NFE is the Deer (Scotland) Act 1996.

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 enhance the experience of visitors to the forest. It is therefore FCS deer policy to:

- Prevent adverse deer impact on commercial tree crops and the wider habitat. In doing so carry out deer culling in an exemplary and humane way and maintain an effective network of external deer fences where they are required;
- Work closely with relevant organisations and neighbours to make sure that there are integrated deer management plans which seek to recognise the interest of all parties and identify opportunities to reduce overall fencing by contributing towards 'strategic landscape scale fencing';
- Take opportunities to optimise income from venison from sporting where this does not conflict with our primary objective of maintaining deer impacts at acceptable level;
- Produce venison in line with Quality Meat Scotland accreditation in the form of The Scottish Quality Wild Venison (SQWV) Assurance Scheme;
- Take all practical steps to slow down the expansion of non-native deer species into areas where they are not currently present

The deer population across the LMP area comprises roe (*Capreolus capreolus*), red (*Cervus elaphus*), and sika deer (*Cervus Nippon*). Historically Red deer have been the predominant species in Sutherland area, however Sika deer numbers are growing, and there are reports of Sika and Red deer interbreeding. This significant change thrown up obvious challenges for FCS and our objectives in the area. This is compounded by the fact that over the coming years the restocking programme will be increasing along with a higher percentage of broadleaves being planted. The survey carried out in 2011 estimates deer numbers within the forest blocks covered by North Sutherland LMP to be slightly higher than the target density of 5 deer per 100ha. In Borgie the population is currently estimated at 8 deer per 100 ha, and in Dalchork – at 7 deer per 100 ha. Please see **Map 9 – Deer management** for details of deer species distribution and areas to be restocked within next 10 years.

External boundary fences within North Sutherland LMP area are deer-fences.

North Sutherland LMP area falls within area covered by the Association of Deer Management Groups and is split between North-western Sutherland Deer Management Group (DMG) – Borgie and part of Dalchork (west of A836 public road) and East Sutherland DMG – Rosal and Dalchork east of A836 public road. The LMP area is currently affected by three FCS Wildlife Management Units (WMUs) covered by individual Deer Management Plans divided into the following areas:

- 51610 – Borgie WMU
- 51611 – Naver WMU
- 51613 – Dalchork WMU

The current WMUs structure will probably undergo a re-alignment to reflect the change District's Land Management structure.

Currently FCS Deer Management Plans contain mainly cull data over a period of years and deer density information, usually noting the overriding objectives. Revision of this approach is underway and Deer Management Planning is moving towards integration with the Land Management Planning. This approach will become more evident in the coming years. As for now, the individual Deer Management Plans for each WMU are held at the North Highland Forest District Office and are available on request.

FCS records Deer Vehicle Collisions (DVC) in the Wildlife Management System, which is updated by a deer controller in given area, and the information is passed to SNH. The risk of DVCs is reduced on property boundaries through a combination of sensibly placed deer fencing and active deer culling. FCS uses SNH authorisation to achieve these culls as appropriate. These authorisations are as per the 1996 Deer (Scotland) Act, Part III, paragraph 18 point 2 with regard to night shooting, any Part II, paragraph 5 point 6 with regard to culling on unenclosed land. In addition to this, FCS uses the general licence for deer culling where required. Where necessary, FCS contributes to road safety groups or panels. This has involved a significant amount of work in the past.

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Low grazing pressure will be tolerated, in particular around areas considered to 'buffer' the wider forest. These buffer areas may consist of either managed open space (deer 'lawn' areas) or planted woodland near existing forest edge where browsing damage will be accepted.

Development of a proportionate zone of browsed vegetation in these areas – either commercial density conifers or broadleaved species capable of coppice growth - also carries wider biodiversity benefits and is accepted as a consequence of efforts to manage deer populations without resorting to extensive fencing.

As the forest plan progresses the focus on deer management will change to ensure favourable conditions are present for the establishment of native broadleaves. It is believed that a density of 5 deer per 100ha or lower will be required for broadleaf establishment. Operational policies and procedures are held at the Forest District Office.

The deer management data is spatially represented on **Map 9 – Deer management**.

**6.1 CSM6 Form**

**CSM 6 Appendix 1b**

**FOREST ENTERPRISE - Application for Forest Design Plan Approvals in Scotland**

**Forest Enterprise - Property**

Forest District:	North Highland Forest District
Woodland or property name:	North Sutherland Forests
Nearest town, village or locality:	Lairg
OS Grid reference:	NC 5638 2361
Local Authority district/unitary Authority:	Highland Council

**Areas for approval**

	Conifer	Broadleaf
Clear felling	2419.19	0.00
Selective felling	0.00	0.00
Restocking	1338.38	734.08
New planting (complete appendix 4)		7.22

1. I apply for Forest Design Plan approval\*/~~amendment approval\*~~ for the property described above and in the enclosed Land Management Plan.

2. \* I apply for an opinion under the terms of the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 for afforestation\* /~~deforestation\*~~ roads\*/ quarries\* as detailed in my application.

3. I confirm that the initial scoping of the plan was carried out with FC staff on 14<sup>th</sup> of May 2015

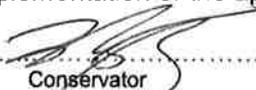
4. I confirm that the proposals contained in this plan comply with the UK Forestry Standard.

5. I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC agreed must be included.

6. I confirm that consultation and scoping has been carried out with all relevant stakeholders over the content of the of the design plan. Consideration of all of the issues raised by stakeholders has been included in the process of plan preparation and the outcome recorded on the attached consultation record. I confirm that we have informed all stakeholders about the extent to which we have been able to address their concerns and, where it has not been possible to fully address their concerns, we have reminded them of the opportunity to make further comment during the public consultation process.

7. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed   
Forest District Manager

Signed  JOHN RISKY  
Conservator

District North Highland Forest District Conservancy HIGHLAND & ISLANDS

Date 14.03.2016

Date of Approval 16/6/16

Date approval ends: 15/06/26

\*delete as appropriate

**FOREST ENTERPRISE - Application for Approval of New Planting**

**1. Forest Enterprise – Property**

Forest District:	North Highland
Woodland or property name:	Dalchork Forest
Nearest town, village or locality:	Lairg
OS Grid reference:	NC 5753 1375 & NC 5233 2525
Local Authority district/unitary Authority:	Highland Council

**2. Proposed areas to nearest tenth of a hectare**

New Planting	7.22 ha
Open Ground	0.45 ha
Total	7.67 ha

**3. Special areas and protected land**

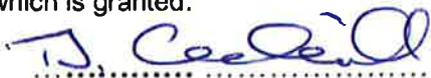
Designation	Area Name or Number	Comments
None		

**4. Proposal details of new planting**

Area Name or number	Gross Area (Ha)	P Year	Spp	Area (Ha)	Open Ground (Ha)	Field Identifier	Comments
Dalnessie junction new planting	2.17	2018	NMB ; SP	1.72	0.45		Native woodland
Dalchork, along A836	5.50	2020	NMB ; SP	5.50	0.00		Native woodland

I apply for Authority to plant as above and as shown on the attached map – please see Map(s) 8 – New planting for details.

I undertake to obtain the necessary permissions from the appropriate statutory body before commencing work under any approval which is granted.

Signed   
Forest District Manager

Signed   
Conservator JOHN RISSY

District North Highland .....

Conservancy Highland & Islands .....

Date ..... 14.03.2016 .....

Approval Date 16/6/16 .....

Date approval ends: 15/06/2026 .....

6.2 Coupe Summary of First Two Phases (2016 – 2026)

Coupe Number & Grid Reference for Restock Coupes	Area of Felling (Ha)	Predicted Volume (m3 OB)	Proposed Restock Year	Area to Restock Within Plan Period (gross)	Comments
Coupe 1 Restock - NC65895622	(-)	(-)	2017	61.61	Productive conifer woodland
			2017	18.00	Riparian woodland
			(-)	2.25	Open
Coupe 2 Restock - NC65665541	(-)	(-)	2020	18.74	Productive conifer woodland
			2020	4.76	Riparian woodland
			(-)	11.27	Open
Coupe 3 Restock - NC67725615	(-)	(-)	2017	49.37	Productive conifer woodland
			2017	25.54	Riparian woodland
			(-)	1.48	Open
Coupe 4 Restock - NC67225569	(-)	(-)	2018	44.01	Productive conifer woodland
			2018	2.03	Riparian woodland
Coupe 5 Restock - NC67915555	(-)	(-)	2018	25.03	Productive conifer woodland
			2018	9.30	Riparian woodland
			(-)	2.08	Open
Coupe 6 Restock - NC65525281	(-)	(-)	2017	46.53	Productive conifer woodland
			2017	22.63	Riparian woodland
			(-)	6.32	Open
Coupe 7 Restock - NC66305295	(-)	(-)	2018	109.31	Productive conifer woodland
			2018	17.69	Riparian woodland
Coupe 8 Restock - NC65445181	(-)	(-)	2017	37.76	Productive conifer woodland
			2017	16.28	Riparian woodland
			(-)	2.70	Open
Coupe 9 Restock - NC66915131	(-)	(-)	2020	34.39	Productive conifer woodland
			2020	7.15	Riparian woodland
			(-)	0.40	Open
Coupe 10 Restock - NC69324157	(-)	(-)	2018	17.71	Native woodland
			2018	3.29	Riparian woodland
			(-)	2.26	Open
Coupe 11 Restock - NC68574206	(-)	(-)	2019	17.17	Riparian woodland
Coupe 12 Restock - NC53852362	(-)	(-)	2018	32.25	Successional woodland
			2017	4.29	Riparian woodland
Coupe 13 Restock - NC53342171	(-)	(-)	2017	9.44	Productive conifer woodland
			(-)	1.88	Open
			(-)	10.65	Open (peatland restoration)
Coupe 14 Restock - NC53882189	(-)	(-)	2018	45.15	Productive conifer woodland
			2018	6.26	Riparian woodland
Coupe 15 Restock - NC54602182	(-)	(-)	2019	39.14	Native woodland
			2019	3.39	Riparian woodland
			(-)	6.26	Successional woodland
			2019	18.28	Open (peatland restoration)
Coupe 16 Restock - NC53562065	(-)	(-)	2017	44.76	Productive conifer woodland
			2017	15.34	Riparian woodland
			(-)	1.16	Open
Coupe 17 Restock - NC55572068	(-)	(-)	2017	32.02	Native woodland
			2017	18.98	Successional woodland
			(-)	2.87	Open (peatland restoration)
Coupe 18 Restock - NC54111872	(-)	(-)	2017	65.42	Productive conifer woodland
			2017	9.87	Successional woodland
			(-)	12.56	Open (peatland restoration)
Coupe 19 Restock - NC54601900	(-)	(-)	2017	18.33	Successional woodland
Coupe 20 Restock - NC55221917	(-)	(-)	2018	14.53	Productive conifer woodland
			(-)	1.43	Open
Coupe 21 Restock - NC56041884	(-)	(-)	2020	26.19	Productive conifer woodland
			2020	23.14	Successional woodland
			2019	3.21	Native woodland
Coupe 22 Restock - NC56611829	(-)	(-)	2019	41.25	Successional woodland
Coupe 23 Restock - NC58471744	(-)	(-)	(-)	127.00	Open (peatland restoration)
Coupe 24 Restock - NC5868574	(-)	(-)	2018	44.68	Successional woodland
			2018	29.23	Native woodland
Coupe 25 Restock - NC59361094	(-)	(-)	2018	50.49	Productive conifer woodland
			2018	3.83	Riparian woodland
Coupe 26 Restock - NC58240994	(-)	(-)	2018	78.26	Productive conifer woodland
			2018	1.20	Riparian woodland
			(-)	1.85	Open
Coupe 27 Restock - NC58900983	(-)	(-)	2021	24.56	Productive conifer woodland
				3.75	Riparian woodland
<b>Restock Coupes Summary</b>				<b>1283.52</b>	

North Sutherland Land Management Plan 2016 - 2026

Coupe Number & Grid Reference for Phase 1 (red) Coupes	Area of Felling (Ha) (gross)	Predicted Volume (m3 OB)	Proposed Restock Year	Area to Restock Within Plan Period (gross) (ha)	Comments
Coupe 1 Felling - NC66905416 <i>Coupe 28 Restock</i>	94.39	32669.00	2023	90.49	Productive conifer woodland
			(-)	3.90	Open
Coupe 2 Felling - NC67755470 <i>Coupe 29 Restock</i>	25.97	7687.00	2022	19.89	Productive conifer woodland
			2022	4.39	Riparian woodland
			(-)	1.69	Open
Coupe 3 Felling - NC67375289 <i>Coupe 30 Restock</i>	66.07	14149.00	2022	54.68	Productive conifer woodland
			2022	3.29	Native woodland
			2022	5.80	Riparian woodland
			(-)	2.30	Open
Coupe 4 Felling - NC67175233 <i>Coupe 31 Restock</i>	33.56	9498.00	2023	17.01	Productive conifer woodland
			2023	11.30	Riparian woodland
			2023	5.25	Native woodland
Coupe 5 Felling - NC66605176 <i>Coupe 32 Restock</i>	53.08	12715.00	2022	49.54	Productive conifer woodland
			2022	3.54	Riparian woodland
Coupe 6 Felling - NC68544126 <i>Coupe 33 Restock</i>	42.76	15767.00	2022	38.34	Productive conifer woodland
			2022	4.42	Riparian woodland
Coupe 7 Felling - NC55232371 <i>Coupe 34 Restock</i>	68.12	4190.00	(-)	68.12	Open (peatland restoration)
Coupe 8 Felling - NC53052165 <i>Coupe 35 Restock</i>	40.29	4675.00	(-)	31.02	Open (peatland restoration)
			2020	6.25	Productive conifer woodland
			2020	3.02	Riparian woodland
Coupe 9 Felling - NC54002027 <i>Coupe 36 Restock</i>	9.63	2941.00	2023	6.71	Productive conifer woodland
			2023	2.92	Riparian woodland
Coupe 10 Felling - NC54662072 <i>Coupe 37 Restock</i>	33.65	3162.00	2024	24.22	Productive conifer woodland
			2024	9.15	Riparian woodland
			(-)	0.28	Open
Coupe 11 Felling - NC54952093 <i>Coupe 38 Restock</i>	73.68	14571.00	2022	31.89	Native woodland
			2022	6.36	Successional woodland
			2022	4.52	Riparian woodland
			(-)	30.91	Open (peatland restoration)
Coupe 12 Felling - NC55091845 <i>Coupe 39 Restock</i>	6.13	348.00	2023	5.24	Successional woodland
			(-)	0.88	Open
Coupe 13 Felling - NC57211891 <i>Coupe 40 Restock</i>	98.83	21301.00	(-)	98.83	Open (peatland restoration)
Coupe 14 Felling - NC60161879 <i>Coupe 41 Restock</i>	167.74	12733.00	2025	57.38	Successional woodland
			(-)	110.36	Open (peatland restoration)
Coupe 15 Felling - NC57911540 <i>Coupe 42 Restock</i>	146.97	28739.00	(-)	146.97	Open (peatland restoration)
Coupe 16 Felling - NC57381512 <i>Coupe 43 Restock</i>	14.38	4950.00	(-)	14.38	Open (peatland restoration)
Coupe 17 Felling - NC59781643 <i>Coupe 45 Restock</i>	156.41	28060.00	(-)	96.23	Open (peatland restoration)
			2023	60.18	Successional woodland
Coupe 18 Felling - NC61001607 <i>Coupe 45 Restock</i>	44.49	6604.00	(-)	44.49	Open (peatland restoration)
Coupe 19 Felling - NC57961358 <i>Coupe 46 Restock</i>	21.06	6977.00	2022	16.21	Productive conifer woodland
			2022	4.85	Riparian woodland
Coupe 20 Felling - NC58121293 <i>Coupe 47 Restock</i>	34.05	12387.00	2023	28.42	Productive conifer woodland
			2023	5.04	Riparian woodland
			(-)	0.59	Open
Coupe 21 Felling - NC58351129 <i>Coupe 48 Restock</i>	60.03	19443.00	2025	60.03	Productive conifer woodland
Coupe 22 Felling - NC58611082 <i>Coupe 49 Restock</i>	26.58	7289.00	2024	23.76	Productive conifer woodland
			(-)	2.82	Open
Coupe 23 Felling - NC58931015 <i>Coupe 50 Restock</i>	17.54	5622.00	2024	14.95	Productive conifer woodland
			2024	2.59	Riparian woodland
Coupe 24 Felling - NC57640949 <i>Coupe 51 Restock</i>	55.89	20201.00	2023	40.50	Productive conifer woodland
			2023	3.75	Riparian woodland
			(-)	11.63	Open (powerline buffers)
Coupe 25 Felling - NC57780856 <i>Coupe 52 Restock</i>	67.62	29239.00	2022	61.83	Productive conifer woodland
			2022	1.23	Riparian woodland
			(-)	4.55	Open (powerline buffers)
<b>RED COUPES SUMMARY</b>	<b>1458.92</b>	<b>325917.00</b>		<b>788.94</b>	

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Coupe Number & Grid Reference for Phase 2 (orange) Coupes	Area of Felling (Ha) (gross)	Predicted Volume (m3 OB)	Proposed Restock Year	Area to Restock Within Plan Period (gross) (ha)	Comments
Coupe 26 Felling - NC66645989 <i>Coupe 53 Restock</i>	31.91	14762.00		(-)	Fallow - to restock outwith plan period
Coupe 27 Felling - NC67695692 <i>Coupe 54 Restock</i>	30.90	10834.00		(-)	Fallow - to restock outwith plan period
Coupe 28 Felling - NC65565117 <i>Coupe 55 Restock</i>	112.20	19536.00		(-)	Fallow - to restock outwith plan period
Coupe 29 Felling - NC67295080 <i>Coupe 56 Restock</i>	75.69	19313.00		(-)	Fallow - to restock outwith plan period
Coupe 30 Felling - NC69094215 <i>Coupe 57 Restock</i>	27.50	11687.00		(-)	Fallow - to restock outwith plan period
Coupe 31 Felling - NC53962419 <i>Coupe 58 Restock</i>	51.77	12555.00		(-)	Fallow - to restock outwith plan period
Coupe 32 Felling - NC53652251 <i>Coupe 59 Felling</i>	62.60	12618.00		(-)	Fallow - to restock outwith plan period
Coupe 33 Felling - NC55082309 <i>Coupe 60 Restock</i>	69.56	12411.00		(-)	Fallow - to restock outwith plan period
Coupe 34 Felling - NC58152088 <i>Coupe 61 Restock</i>	240.31	55614.00		(-)	Fallow - to restock outwith plan period
Coupe 35 Felling - NC62571409 <i>Coupe 62 Restock</i>	59.59	8929.00		(-)	Fallow - to restock outwith plan period
Coupe 36 Felling - NC62181252 <i>Coupe 63 Restock</i>	75.26	14771.00		(-)	Fallow - to restock outwith plan period
Coupe 37 Felling - NC58931141 <i>Coupe 64 Restock</i>	31.67	11755.00		(-)	Fallow - to restock outwith plan period
Coupe 38 Felling - NC62121030 <i>Coupe 65 Restock</i>	91.31	27631.00		(-)	Fallow - to restock outwith plan period
<b>ORANGE COUPES SUMMARY</b>	<b>960.27</b>	<b>232416.00</b>		<b>(-)</b>	
<b>FULL SUMMARY</b>	<b>2419.19</b>	<b>558333.00</b>			

Block Name & Grid Reference for New Planting	Area of Felling (Ha) (gross)	Predicted Volume (m3 OB)	Proposed Planting Year	Area to Restock Within Plan Period (gross) (ha)	Comments
Dalnessie junction NC 5753 1375	(-)	(-)	2020	1.72	Native woodland
Along A836 NC 5233 2525	(-)	(-)	2019	5.50	Native woodland
<b>New Planting Summary</b>				<b>7.22</b>	

6.3 Tolerance Table

	<b>Adjustment to felling coupe boundaries</b>	<b>Timing of restocking</b>	<b>Change to species</b>	<b>Wind throw or environmental response</b>	<b>Adjustment to road lines</b>
<b>FC Approval not normally required (record and notify FC)</b>	<10% of coupe size	Up to 5 planting seasons after felling (allowing fallow periods for Hylobius).	<p>Change within species group E.g. Scots pine to birch,</p> <p>Non-native conifers e.g Sitka spruce to Douglas fir,</p> <p>Non-native to native species (allowing for changes to facilitate Ancient Woodland policy).</p>	<p><b>Low sensitivity area</b> The affected area where wind throw, disease or other environmental factors represents more than 60% of the crop, the area including standing trees within the affected area may be felled.</p>	<p><b>Low Sensitivity Area</b></p> <ul style="list-style-type: none"> <li>• Creation of turning points/ loading bays.</li> <li>• Deviation of less than 100m either side of the predicted centre line of the road/ track in low sensitivity areas.</li> </ul> <p><b>High Sensitivity Area</b> Deviation less than 50m in either direction from the predicted centre of track</p>
<b>Approval by exchange of letters and map</b>	10-15% of coupe size	5 years +	Change of coupe objective likely to be consistent with current policy (e.g. from productive to open, open to native species).	<p><b>Low sensitivity area</b></p> <ul style="list-style-type: none"> <li>• As above to include up to 5ha of healthy crop beyond the affected area to a wind firm or reasonable edge.</li> </ul>	<p><b>Low Sensitivity Area</b> Deviation of 100 - 150m metres either side of the predicted centre of road in areas of low sensitivity.</p>

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				<ul style="list-style-type: none"> <li>The affected area where wind throw or disease is less than 60% of the crop.</li> </ul> <p><b>High Sensitivity Areas</b> The affected area where wind throw or disease is more than 60% of the crop.</p>	<p><b>High Sensitivity Area</b> Deviation of 50-100m in either direction from the predicted centre line of road or track</p>
<b>Approval by formal plan amendment</b>	>15% of coupe size		Major change of objective likely to be contrary to policy, E.g. native to non-native species, open to non-native,	<p><b>Low sensitivity area</b> Greater than 5 Ha of healthy crop required to reach a wind firm or reasonable edge beyond the affected area.</p> <p><b>High sensitivity area</b></p> <ul style="list-style-type: none"> <li>The affected area where wind throw or disease is less than 60% of the crop.</li> <li>Felling of standing trees or healthy crop beyond the affected area.</li> </ul>	Deviations exceeding the above.

## 6.4 Management Prescription Types

The future habitat management for North Highland FD Land Management Plans is visualised on the plan maps as zones of proposed management prescriptions. These management prescription types are detailed in the table below and further detail is provided in **6.5 – Productive Forestry Prescriptions** and **6.6 – Native Woodland Prescriptions**.

Management Prescription Type	Stocking Details at Initial Planting	Management Type Detail
Productive Conifer Woodland  (See Section 6.5 for detailed species prescriptions)	2500 – 3500 stems per hectare  70% area conifer species  20% area managed open space  10% area broadleaf species	Primarily comprising conifer species in a silvicultural mixture appropriate to site soils and climate. The aim of this management type is to produce softwood by clearfelling for sawlog, small roundwood and biomass markets. The broadleaf element will generally be concentrated around archaeological and recreation sites, wet ground areas, boundaries with open ground and/or roads; however on sites with limited nutrition an increased broadleaf element will be included as part of the silvicultural mixture to contribute to site improvement (for example 10% downy birch in a sitka/larch or sitka/lodgepole mixture. Open ground will be incorporated around archaeological and recreation sites and as unplatable (for example rocky) ground throughout the coupe. Strenuous effort will be made to control herbivores and the sites will be monitored using the FCS Stocking Density Assessment protocol.
Native Woodland  (See Section 6.6 for detailed species prescriptions)	Minimum 1600 stems per hectare  10% to 60% native broadleaves  Up to 70% Scots pine (percentage depending on suitability of the ground)  20% open space  or  80% area native broadleaves  20% open space	Where this management type is proposed native tree and shrub species will be established at lower density mosaics reflecting the appropriate NVC woodland type for the local soils and climate as detailed in Section 6.6 – Native Woodland Prescriptions. Primarily established with the aim of increasing biodiversity, enhancing recreation and education opportunities and potentially producing low quality timber on long rotations (EG for firewood markets) this woodland will be eventually create a woodland stand structure that contains a range of different age classes, both mature and veteran trees with deadwood and some permanent open areas at the margins and internally. A light level of grazing by herbivores sufficient to allow regeneration of a characteristic range of trees and shrubs and a well-developed field layer will be tolerated although deer control will be sufficient to allow establishment of transplants and eventually progression to regeneration. Although non-native tree species will generally be absent, they will be tolerated at low levels (less than 15% of species by area).
Riparian Woodland  (See Section 6.6 for detailed species prescriptions)	800- 1600 stems per hectare  60% area native species  40% open space	The aim of this woodland type is to provide a significant buffer between productive forestry and watercourses and waterbodies that will increase biodiversity and enhance riparian and aquatic habitats. The species that are planted in riparian zones will be selected to match the NVC community for the appropriate soils type and detail of the proposed habitat prescriptions is contained in Section 6.6. Native tree and shrub species will be established in clusters of high density plantings appropriate to site type and framing other significant habitat (e.g. water vole grassland). A light level of grazing by herbivores sufficient to allow regeneration of a characteristic range of trees and shrubs and a well-developed field layer will be tolerated although deer control will be sufficient to allow establishment of transplants and eventually progression to regeneration. The long term aim is that this habitat type will develop to form a permanent network of 'natural reserve' habitat so the fluctuation of levels of open space and woodland will be tolerated although prolific conifer regeneration that will compromise overall aims will be removed.
Successional woodland  (please see section 6.6 for detailed prescription)	500 – 1600 stems per hectare  Minimum 20% of canopy cover;  Non-native conifers (SS/LP/JL)  Native broadleaves, SP and juniper planted in groups; no less the 500 stems/ha (gross)	The aim of this woodland type is to maintain positive greenhouse gas balance on sites which (judging by altitude, exposure or proximity to wetlands and yield classes and canopy cover in previous rotation,) are unlikely to achieve tree growth of at least SSYC8 without significant cultivation, and/or fertiliser input and where peatland restoration is unlikely to be successful and bring significant benefits due to peat condition or/and lack of hydrological links with existing or restored bog. It will provide a buffer between productive forestry and open bog.  A canopy cover of the least 20% will be achieved by mixture of natural regeneration of both native (Downy birch, Goat willow, Dwarf birch) and non-native species (LP, SS and JL) from existing seed source and planting of native species not currently present on/adjacent to site (Scots pine, Aspen, Rowan, Alder and Juniper) in groups, with no less than 500 stems per gross hectare. This woodland may take longer to develop than establishment by restocking, however there is evidence to suggest that this will allow a richer ground flora to develop and more natural treeline to evolve, with the consequent benefits to biodiversity and landscape.

		<p>Developing regeneration will be monitored and non-native species will be gradually removed from areas planted with native species and those directly adjacent to existing and/or restored bogs, in order to prevent their spread into the priority habitats and leading in long term to primarily native type of woodland.</p> <p>If the developing woodland can be utilised for timber production then that option will be reserved and clearly stated in future planning documents.</p>
Low Impact Silvicultural Systems	Dependent on the individual system chosen and the seed sources available	LISS is proposed as a prescription where climate is suitable and where it will achieve specific aims – for example addressing water or soil quality/stability issues, enhancing landscape value and/or contributing to biodiversity enhancement. As forests move through the initial thinning regimes a decision will be taken as to which LISS is most appropriate for the site and the management aims. Most commonly shelterwood systems will be practised, avoiding clearfelling areas larger than 2 hectares. Full management prescriptions are contained in the coupe workplan for each LISS area.
Minimum intervention	Dependent on individual area	Minimum intervention is proposed where the land is predominantly wooded or progressing towards woodland cover. The aim of this management type is to develop semi-natural habitats in the future. Depending on how the woodland structure develops, it might be desirable to change the management type, so some thinning and/or group felling can take place to diversify stand or species composition. Use of MI classification allows this change to be made in the future as MI doesn't have to apply in perpetuity.
Natural Reserve	Dependent on individual area	A natural reserve is predominantly wooded and permanently identified and is sited in a location where it will be of particularly high biodiversity benefit (for example riparian woodland). All NRs will be managed by minimum intervention unless alternative management has higher conservation or biodiversity value. Any management operations proposed will solely be to protect the integrity of the habitat (for example removal of invasive non-native regeneration). The function of NRs is to provide continuity of habitat to allow sedentary species to establish and thrive. They provide reservoirs of permanent habitat from which more mobile species can expand into other areas of woodland. The two types of NR proposed will be based on semi-natural woodland origin and on plantation woodland origin. It is intended that most riparian woodland will eventually be adopted as natural reserve although with the management required to establish the appropriate species this cannot yet be the case.
Long Term Retention	Dependent on individual area	A LTR is a tree or stand of trees retained for environmental benefit significantly beyond the age or size generally adopted by North Highland Forest District. LTR's are proposed because the trees (not the land they occupy) are of significant landscape or biodiversity benefit. An LTR will be proposed where it is desirable to retain the existing stand beyond normal economic maturity for benefits noted, but there is no imperative to retain permanent woodland cover once the existing stand has fulfilled its objective. In most cases, when selected, LTRs will comprise a stand of stable standing trees however there may be cases where it is desirable to retain large patches of windblow to increase structural diversity and deadwood volume. This latter type of LTR, if present, will be sited where landscape is a low or insignificant priority.
Peatland restoration	(-)	<p>This management type aims to restore valuable blanket bog habitat to favourable condition and is to be applied on sites where the likelihood of success is high (poor tree growth rate in previous rotation combined with significant peat depth, high water table, presence of Sphagnum etc.) and where potential environmental benefits are highest (high probability of being turned into net carbon sink, adjacency to and/or hydrological links with designated peatland sites and/or non-designated active bogs, adjacency to high sensitivity sites for dunlin and golden plover).</p> <p>After removal of the crop (depending on size of the trees by either felling or mulching) works to block drains and furrows and to remove regenerating non-native trees will be undertaken. Rising water table is likely to inhibit natural regeneration of tree species, but regeneration of native broadleaves (up to 10% of the area) will be accepted, primarily associated with drier knolls (significantly above the water table) and watercourses (where presence of native trees benefits riparian habitats).</p>
Open Land	(-)	Land is maintained as open habitat for biodiversity gain where specific species or habitat types will benefit or where another land management objective exists (e.g. agriculture – crofting tenure). Open land will also be specifically prescribed where large scale heritage sites, not able to be accommodated in the standard open space of other habitat types needs protected. Open space will form a key element of native and riparian woodland expansion. Open land as defined in this LMP will comprise a maximum of 20% broadleaf woodland or 10% broadleaf woodland and 10% conifer woodland, primarily associated with improving riparian habitats.

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NB:

- All procurement of planting material will adhere to the current guidance (FCS, 2007) on the sourcing of forest reproductive materials.
- All operations will adhere to the Controlled Activities Regulations 2005 General Binding Rules with respect to appropriate buffer strips between restock areas and water bodies.
- It is anticipated that initial applications of potassium, phosphate and nitrogen may be required to establish productive conifer crops. Any requirement for detailed remedial fertiliser programmes will be decided following foliar analysis. Heather control and silvicultural mixtures will be used as a first alternative to fertiliser application. Any initial or remedial fertiliser programmes will adhere to current industry best practice and follow FC Guidelines on water catchment protection. Restocking will be carried out with the principles of pesticide and fertiliser reduction foremost.

## 6.5 Productive Forestry Prescriptions

Soil Group	Soil types relevant to North Highland FD	Characteristics	Species Prescription for Commercial Restocking
1	Brown earth	Soils with typically good aeration and drainage throughout the profile and well-incorporated organic matter. These soils range from very rich to poor and usually allow deep rooting. Likely vegetation to be encountered includes broad leaved grasses, (e.g. Yorkshire fog, Bent), bracken, bramble, foxgloves, violets and a diverse range of herbs.	<p>Douglas Fir on Poor (must be without heather) to Rich fertility with Moist to Dry soil moisture. Desirable intimate or group mixture; European Larch*, Norway Spruce or Western Red Cedar. Generally in sheltered areas with sufficient rainfall</p> <p>Sitka or Norway Spruce on Poor to Medium fertility with Wet to Fresh soil moisture. Desirable intimate or group mixture; each other or European/Hybrid Larch*</p> <p>Scots Pine in Podzolised areas on Poor to Medium fertility with Moist to Dry soil moisture. Desirable intimate or group mixture; Japanese/Hybrid or European Larch*</p> <p>European Larch* on Medium to Rich fertility with moist to Moderately Dry soil moisture. Desirable intimate or group mixture; Scots Pine or Douglas Fir</p> <p>Japanese/Hybrid Larch* on Poor to Medium fertility with Very Moist to Fresh moisture. Desirable intimate or group mixture; Scots Pine</p> <p>Sycamore on Medium to Rich fertility with Moist to Fresh soil moisture. Desirable intimate mixture: Ash† or European Larch*</p> <p>Where improved climatic conditions allow:</p> <p>Sessile Oak on Medium to Rich fertility with Moist to Slightly Dry soil moisture. Pedunculate Oak (Local seed source if possible) on Medium to Rich with Very Moist to Fresh soil moisture. Desirable intimate/group or blocky mixtures include; Norway Spruce, European Larch*, Western Red Cedar, Silver Birch or Ash†</p> <p>Silver Birch on Poor to Medium with Very Moist to Fresh soil moisture. Desirable intimate or group mixture: Oak or Scots Pine</p> <p>Ash† on Rich fertility with moist to Fresh soil moisture and less acidic sites. Mix in groups with; Sycamore, Oak or Beech</p>
3	Podzols	<p>Develop on unfertile acid soils with high rainfall where nutrients are flushed into the lower horizons of the soil profile. Very poor fertility. Induration or an impenetrable pan will prevent good drainage, resulting in a need to break this impediment with suitable cultivation that will allow freer draining and greater rooting depth.</p> <p>Vegetation common to these soils are ericaceous plants, grasses including Wavy hair, Matt and Purple moor grass. Light bracken and feather mosses may also be present.</p>	<p>Scots Pine with Moist to Dry soil moisture. Desirable mixture; intimate mixture with Hybrid Larch*</p> <p>Sitka Spruce with Wet to Moist soil moisture. Mix with; Lodgepole Pine in wetter areas or Japanese/Hybrid Larch*</p> <p>Japanese/Hybrid Larch* with Very Moist to Fresh soil moisture</p> <p>Where improved climatic conditions allow:</p> <p>Sessile Oak (not on 3m) with Moist to Fresh soil moisture. Desirable mixture; Hybrid Larch*, Scots Pine or limited Norway Spruce</p>
4	Ironpans	Develop on free draining acid soils with high rainfall. The transfer of aluminium and iron in solution down through the soil profile develops an ironpan that is impervious to water and root penetration. Vegetation and fertility is similar to that of Podzols above	<p>Scots Pine with Moist to Dry soil moisture. Desirable mixture; Japanese/Hybrid Larch*</p> <p>Japanese/Hybrid Larch* with Very Moist to Fresh soil moisture. Desirable mixture; Scots Pine</p> <p>Lodgepole Pine in elevated areas with Wet to Fresh soil moisture</p> <p>Sitka or Norway Spruce (4 &amp; 4b) with Wet to Fresh soil moisture. Desirable intimate or group mixture; Lodgepole Pine in wetter areas or Japanese/Hybrid Larch* or Scots Pine.</p> <p>Sycamore (4b only) with Moist to Fresh soil moisture. Consider intimate mixture with Japanese/Hybrid Larch*</p> <p>Breaking of the ironpan is desirable; so as to allow drainage of the site and a potential increase in soil rooting volume and nutrient availability, therefore cultivation that includes amelioration of the ironpan will be considered.</p>
5	Groundwater gleys	Dominant vegetation is commonly Tufted hair grass, Willows and herbs. Occurring where a shallow water table causes waterlogging and therefore subject to compaction and poorly oxygenated. The soil is permeable but is affected by a fluctuating ground-water table. Moderate nutrient availability.	<p>These areas are generally presumed to be open or riparian zones. <u>Productive planting will be outwith the 30m buffer zone of native woodland.</u> Where rooting depth is adequate:</p> <p>Sitka or Norway Spruce on Medium to Rich fertility with Very Wet to Moist soil moisture. Consider adding blocks of Downy Birch and Alder</p> <p>Intimate mix of Downy Birch and Common Alder on Poor fertility with Very Wet to Moist soil moisture</p>

6	Peaty Gleys	Very Poor to Rich nutritional availability, these soils are indicated by Purple moor grass, Calluna and Cross-leaved heath, with sphagnum prevalent in the North and West.	Sitka Spruce on Poor to Medium fertility with Wet to Fresh moisture. Experience in North Highland suggests this crop will rarely establish as a pure stand without fertiliser input. Intimate mix with Lodgepole Pine in wetter and poorer areas or with Japanese/Hybrid Larch* in more Podzolised areas. Consider adding blocks of Downy Birch  Downy Birch on Poor to Medium fertility with Very Moist to Fresh soil moisture  High winter water table can be expected and good drainage will be required to achieve best results.
7	Surface Water Gleys	Differing from groundwater gleys in that waterlogging is caused not by a high water table, but by lateral surface-water movement through the soil profile developing a seasonally fluctuating water table. Resulting anaerobic conditions will restrict rooting. Indicative vegetation includes Tussock grass and Creeping Buttercup. Again poor to moderate nutritional availability can be expected.	Sitka or Norway Spruce on Medium fertility with Wet to Fresh soil moisture. Desirable mixture; each other, Japanese/Hybrid Larch* or with Lodgepole Pine in wetter poorer areas  Where improved climatic conditions allow:  Pedunculate Oak on 7b Medium to Rich fertility with Moist to Fresh soil moisture. Desirable group or blocky mixture; Norway Spruce  Drainage will be required along with micro site cultivation such as mounding.
8	Juncus bog	Rushes are prevalent. A shallower peat type, nutrient rich and containing some mineral grains. Peat is black in colour.	FC Forests and Peatland Habitats Guideline Note (2000) and FCS Practice Note 'Forestry on peatland habitats' (2014) states that :  'where the site is a priority for habitat restoration on ecological grounds (to open habitat or native/bog woodland) , conventional restocking will not be required';  'where site is not priority for restoration to open peatland or bog/other type of native woodland and it's unlikely to support tree growth greater than Yield Class 8 (Sitka spruce), the appropriate option will be to create peatland edge woodland'  'where the site is not a priority for restoration and it's likely to support rapid enough tree growth to compensate for greenhouse gas losses from the soil – understood to be Yield Class 8 or above for Sitka Spruce – then the conventional restocking should be undertaken'  It may be therefore considered that more fertile, flushed peats and areas of deeper peat where hydrology has been irreversibly compromised will remain suitable for restocking.  Where areas of deeper peat are encountered in intimate mosaic with more favourable soils Sitka Spruce (QSS) will be favoured in a mixture with Lodgepole Pine of disease resistant provenance or Hybrid Larch. On these more nutritionally challenged sites a proportion (up to 20%) of soil improving species such as birch will be considered.
9	Molinia bog	Often existing on hillsides where flushing is more pronounced. Moderate nutrition available.	
10	Unflushed Flat or Raised Bogs	Sphagnum Moss dominated bogs, formed as peat levels rose to form a dome, reliant on precipitation for moisture and nutrients. Mineral grains are absent and the peat is reddish-brown and tends to be deeper.	
11	Unflushed Blanket Bogs	Calluna, cotton-grass, deer grass bogs including the hill peats located on upland plateaux and hillsides deeply dissected by burns.	
14	Eroded Bogs	Very poor nutritional status characterised by bog asphodel, deer grass, bog cotton etc. Can be dominated by either deep and frequent eroded areas (haggs) or frequent pools of standing water (flows). Very deep peat.	
15	Littoral soils	Formed on coastal sands and shingles, such as the dunes found at Morrish More near Tain. The category is split into shingle (15s), dunes (15d) and then sands with varying water table depths (15e,w,g,i). These sands can be distinguished by various levels of mottling. Coastal grasses and heathland plants predominate.	

NB – These prescriptions must be adopted within the local context set out in the main body of this Land Management Plan. Climate, (along with soils) must be included as **the** determining factor in final species selection.

- Planting will generally become a mosaic of the species recommended above and will include areas of non-productive open ground and broadleaf riparian zones. Species choice will be dictated by local conditions and agreed after site visits by management staff.
- No commercial forestry type likely to be suitable on sites wetter than SMR "Very Moist" and vegetation indicating SNR <4.5
- Origin for SS is QSS.
- \*Given the requirements of Ramorum (on larch) Action Plan for Scotland (2015), and reports of new *Phytophthora ramorum* outbreaks (e.g. Raasay), despite the North Sutherland LMP area being in Zone 3, the lack of planting material might not allow for using Larch while restocking. If that's the case, alternative species to be used will be agreed at 75% site visit and/or at the work plan stage of planning process.
- Origin for LP is ALP.

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- Mixed stands mean that each species occupies at least 20% of the canopy. Blocky areas should aim to cover the area that 3-4 mature trees would cover. Mixtures may need management to favour one or more species. Intimate mixtures of broadleaves with Sitka Spruce or Scot's Pine will normally result in the conifer's dominating overtime so planting in blocks is often the better option.
  - †Movement of any plant-passported Ash plants, trees and seeds within Great Britain is, until further notice, prohibited under UK Government legislation (2012 Plant Heath Order No. 2707) introduced on 29.10.2012.

References:

Kennedy F (2002) *The Identification of Soils for Forest Management*, Edinburgh: HMSO

Pyatt, G; Ray, D; Fletcher, J (2001) *An Ecological Site Classification for Forestry in Great Britain; Bulletin 124*, Edinburgh: FCS

Savill, P.S. (1991) *The Silviculture of Trees used in British Forestry*, Oxfordshire: CAB International

Mason, B (2006) *Managing Mixed Stands of Conifers and Broadleaves in Upland Forests of Britain*, Information Note, Edinburgh: FCS

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<http://www.forestry.gov.uk/fr/INFD-8CVE4D>

## 6.6 Native woodland prescriptions

Soil Group	Soil types relevant to the North Highland FD	Characteristics	Aim*	Indicative Species Prescription**
1	Brown Earths	Soils with typically good aeration and drainage throughout the profile and well-incorporated organic matter. These soils are mainly * fertile and allow deep rooting. Likely vegetation to be encountered includes fine grasses, holcus, bracken, bramble, foxgloves, violets and a diverse range of herbs. * However Podzolic Brown earths where nutrients have been leached are "Very Poor"	NW	<p><b>W19</b> Juniper wood with sorrel (At least 50% Juniper; other species: Downy birch, Scots pine, Rowan) on 1, 1u, 1z and 1b from sheltered sites up to sub alpine areas with DAMS &lt; 22</p> <p><b>W18</b> Scots pine with heather ( 50% to 70% Scots pine; other species: Downy &amp; Silver birch, Rowan) on 1z in cool to warm with DAMS &lt; 18</p> <p><b>W11</b> Upland oak-birch with bluebell (At least 50% Sessile oak with Downy birch; other species: Silver birch, Holly, Pedunculate oak, Aspen ) on 1, 1u and 1z in cool to warm with DAMS &lt; 18</p>
3&4	Podzols & Ironpan soils	Developed on Acid * soils with high rainfall where nutrients are flushed into the lower horizons of the soil profile. Frequently induration or an impenetrable pan will prevent good drainage, resulting in a need to break this impediment with suitable cultivation that will allow freer draining and greater rooting depth.  Vegetation common to these soils are ericaceous plants, grasses including deschampsia flexuosa, nardus, carex and molinia. Light bracken and feather mosses may also be present. * NOT fertile soils	NW  RW	<p><b>W18</b> Scots pine with heather (50% to 70% Scots pine; other species: Silver/Downy birch, Rowan, Juniper) on 3, 3m, 4, 4z and 4b Not in Sub-alpine climate, (Cool to Warm) DAMS &lt; 18.</p> <p><b>W19</b> juniper wood with sorrel (at least 50% Juniper; other species: Downy birch, Scots pine, Rowan) on 3 and 4b Possible up to Sub-alpine zone</p> <p><b>W17</b> Upland oak-birch with blueberry (At least 50% Sessile oak with Downy birch; other species: Silver birch, Pedunculate oak, Holy and Rowan) on 3s and 3ms Mainly in Lower Cool to warm climate zone. DAMS &lt; 18.</p>
5	Groundwater Gleys	Dominant vegetation is commonly Deschampsia caespitosa, Holcus, salix spp and herbs. Occurring where a shallow water table causes waterlogging and therefore subject to compaction and poorly oxygenated. The soil is permeable but is affected by a fluctuating ground-water table. Moderate nutrient availability.	NW RW	<p><b>W7</b> Alder-ash with yellow pimpernel (50% Alder with Ash†; other species: Downy birch, Common hawthorn, Goat willow, Hazel) on 5 and 5f</p> <p>Cool to Warm. Sheltered to Moderately exposed. (DAMS &lt;16)</p>
6	Peaty Gleys	Very Poor to medium nutritional availability, these soils are indicated by Molinia, Calluna and Erica spp, with sphagnum prevalent in the North and West.  High winter water table can be expected and good drainage will be required to achieve best results.	NW RW	<p><b>W18</b> Scots pine with heather ( 50% to 70% Scots pine; other species: Downy &amp; Silver birch, Rowan) on 6z "moist" to "fairly dry"</p> <p><b>W4</b> Birch with purple moor-grass (50% to 70% Downy birch; other species: Goat willow, Alder) on 6 and 6b. Cool to Warm. DAMS &lt; 18.</p>
7	Surface Water Gleys	Differing from groundwater gleys in that waterlogging is caused not by a high water table, but by induration preventing adequate drainage leading to a seasonally fluctuating water table. Resulting anaerobic conditions will restrict rooting.  Indicative vegetation includes Holcus, Juncus, Nardus and Deschampsia caespitosa. Again poor to moderate nutritional availability can be expected.  Drainage will be required along with micro site cultivation such as mounding..	NW  RW	<p><b>W11</b> Upland oak-birch with bluebell (At least 50% Sessile oak with Downy birch; other species: Silver birch, Holly, Pedunculate oak, Aspen) on 7b</p> <p><b>W18</b> Scots pine with heather (50% to 70% Scots pine; other species: Silver/Downy birch, Rowan, Juniper) on 7z possibly on margins leading to drier knolls.</p> <p><b>W7</b> Alder-ash with yellow pimpernel (50% Alder with Ash†; other species: Downy birch, Common hawthorn, Goat willow, Hazel) on 7, 7b and 7z Cool to Warm. Sheltered to Moderately exposed. (DAMS &lt;16)</p>
8	Juncus Bogs	Juncus spp are prevalent. A shallower peat type, nutrient rich and containing some mineral grains. Peat is black in colour.	NW RW	<p><b>W4</b> Birch with purple moor-grass (50% to 70% Downy birch; other species: Goat willow, Alder) on 8b and 8c.</p>
9	Molinia Bogs	Often existing on hillsides where flushing is more pronounced. Moderate nutrition available.	NW RW  OG	<p><b>W4</b> Birch with purple moor-grass (50% to 70% Downy birch; other species: Goat willow, Alder) on 9a, 9b, 9c and 9d suitable for the transitional areas at the margins between productive forest blocks and peatland restoration sites.</p> <p>9e Trichophorum, Calluna, Eriophorum, Molinia Bogs will not be planted or restocked - restoration of peatland.</p>

10	Unflushed Flat or Raised Bogs	Calluna, Eriophorum, Trichophorum Bogs including the hill peats located on upland plateaux and hillsides deeply dissected by burns.	OG	10b Upland flat or raised bogs – priority areas for peat restoration.
11	Unflushed Blanket Bogs	Calluna, Eriophorum, Trichophorum Bogs including the hill peats located on upland plateaux and hillsides deeply dissected by burns.	OG	11a A rare peatland type mainly restricted to the driest eastern uplands
			OG	11b,c,d Unflushed blanket bogs - priority areas for peatland restoration
14	Eroded bogs	Very poor nutritional status characterised by bog asphodel, deer grass, bog cotton etc. Can be dominated by either deep and frequent eroded areas (haggs) or frequent pools of standing water (flows). Very deep peat	OG	14 & 14h Hagged bogs – unsuitable for forestry or woodland – peatland habitat
			OG	14w Pooled bogs – common across Northern Scotland forming the ‘Flows’ – peatland.
15	Littoral soils	Wormed on coastal sands and shingles, such as the dunes found at Morrich More near Tain. The category is split into shingle (15s), dunes (15d) and then sands with varying water table depths (15e,w,g,i). These sands can be distinguished by various levels of mottling. Coastal grasses and heathland plants predominate.	NW	<b>W16</b> Lowland oak-birch with blueberry limited to “Warm” climate (at least 50% Sessile oak with Downy/Silver birch; other species: Pedunculate oak, Holly, Rowan and Aspen ).

Aim\* : NW - Native Woodland Expansion / RW – Riparian Woodland Expansion / OG – Managed Open Ground e.g. peatland restoration

Indicative Species Prescription\*\* : details of restock proposal will be agreed at ‘75% site visit’. In some circumstances (e.g. difficult/limited access, poor nutrient availability, exposure) establishment of any native species, providing at least 20% of canopy cover, will be accepted. On better, productive sites (e.g. PAWS) the aim will be to establish native species at commercial densities with up to 80% of canopy cover.

†Movement of any plant-passported Ash plants, trees and seeds within Great Britain is, until further notice, prohibited under UK Government legislation (2012 Plant Health Order No. 2707) introduced on 29.10.2012.

NB – These prescriptions must be adopted within the local context set out in the main body of this FDP. Climate must be included as a determining factor in final species selection.

- Planting will generally become a mosaic of the woodland types recommended above, dictated by local conditions and agreed after “75% Site Completion Visits”
- Particular note should be made of the inadvisability of planting the peatland types 10 – 14 that may predominate on marginal FD sites
- No native woodland type likely to be suitable on sites wetter than SMR “Very Moist” and veg indicating SNR <4.5

#### References:

Kennedy F (2002) *The Identification of Soils for Forest Management*, Edinburgh: HMSO

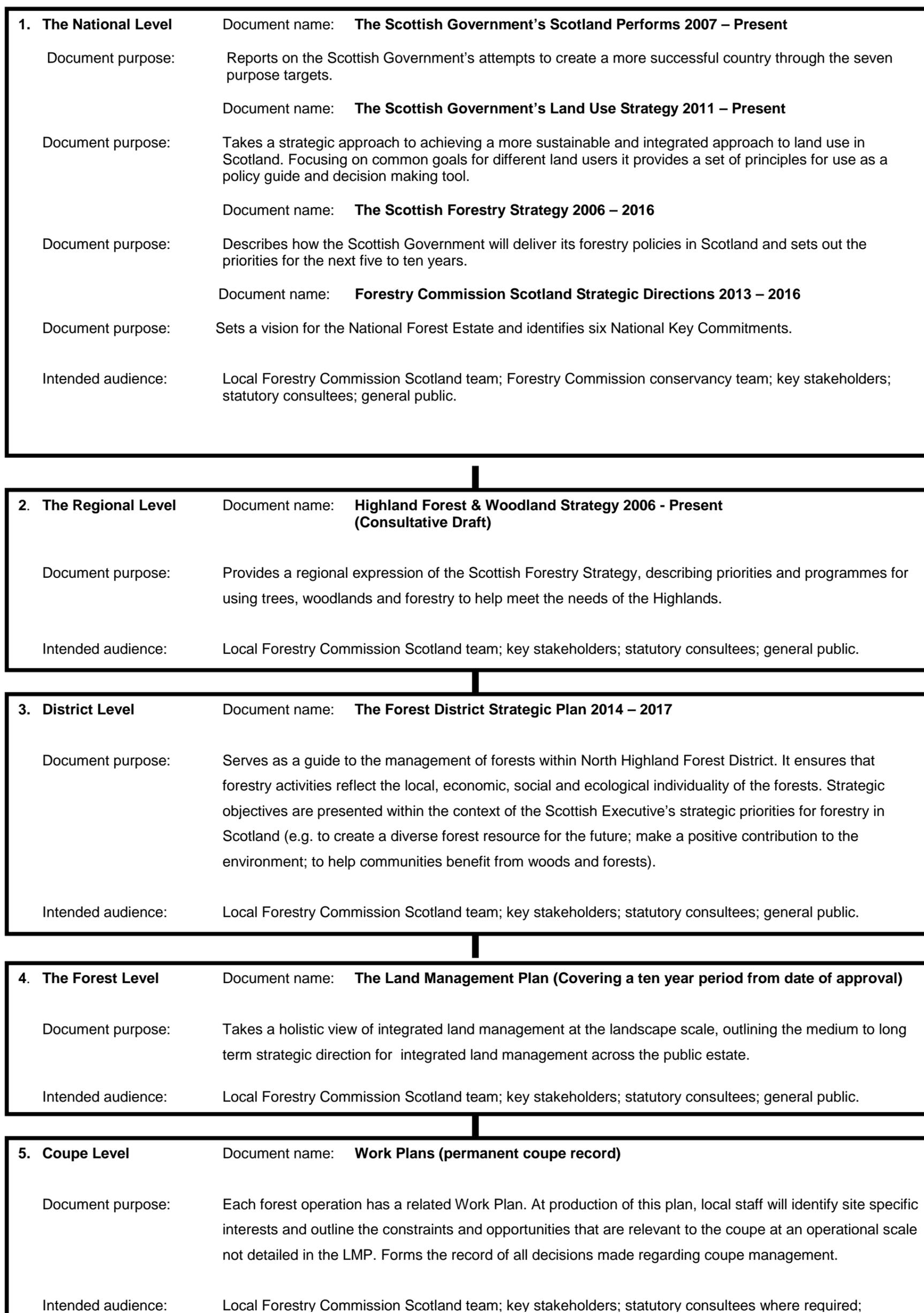
Pyatt, G; Ray, D; Fletcher, J (2001) *An Ecological Site Classification for Forestry in Great Britain; Bulletin 124*, Edinburgh: FCS

Rodwell J.S. and Paterson G.S. (1994) *Creating New Native Woodlands; Bulletin 112*, London: HMSO

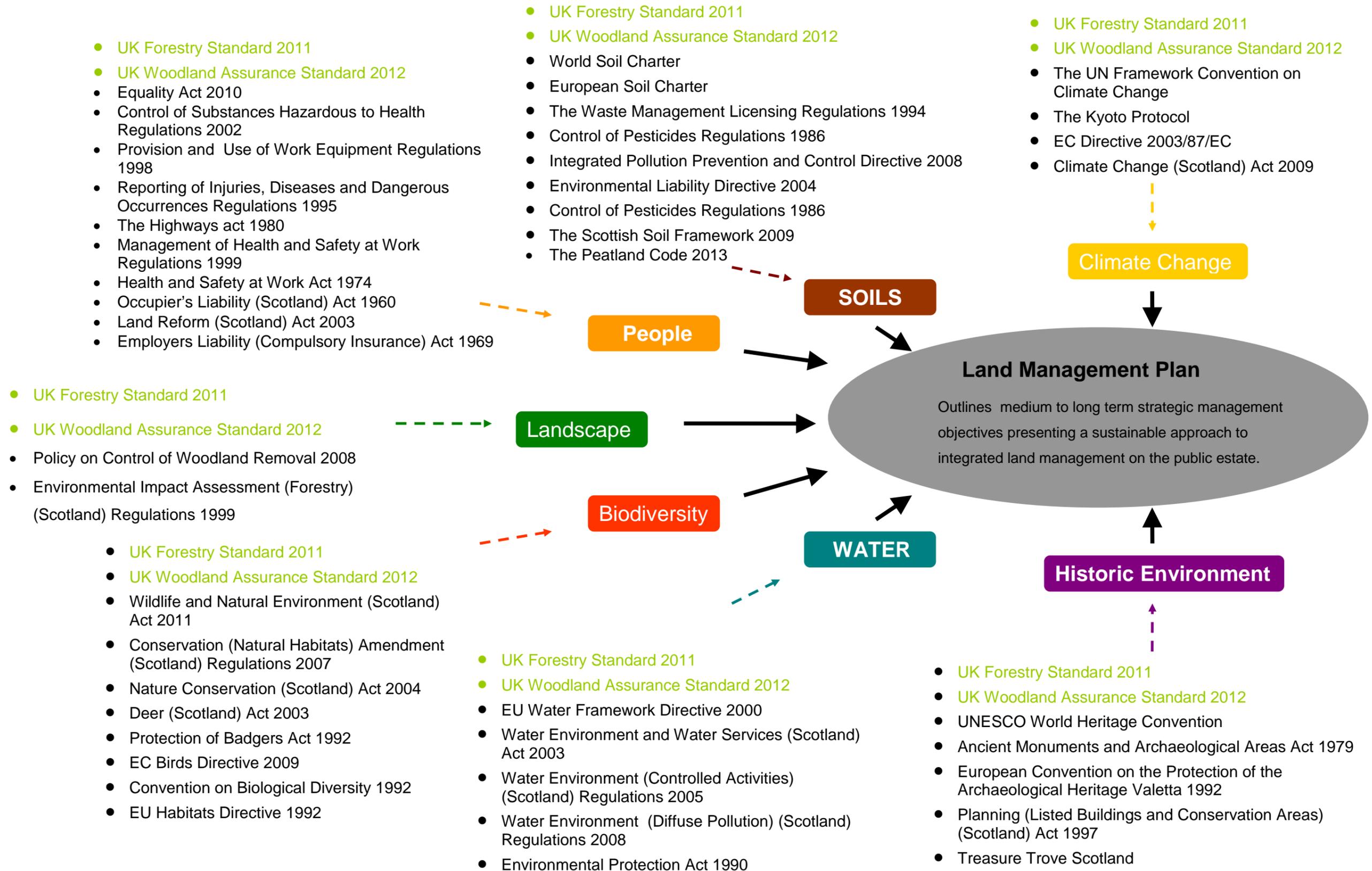
Thompson, R (2009) *Management of PAWS on the National Forest Estate in Scotland*, Edinburgh: FCS

## Appendix I: The Relevant Planning Framework in Scotland

### FE Scotland prepares Land Management Plans within the following planning framework:



APPENDIX II: KEY POLICIES AND GUIDANCE



## External consultation record

Consultee	Date contacted	Date response received	Issues raised	Forest District response (incl. amendments made to plan as a result of consultee comments)
The Highland Council – forestry department	30.01.2015 and 31.07.2015	No response		
The Highland Council – archaeology department	30.01.2015 and 31.07.2015	No response		
The Highland Council – TEC service	30.01.2015 and 31.07.2015	No response		
SSE	30.01.2015 and 31.07.2015	No response		
Kyle of Sutherland Fisheries	30.01.2015 and 31.07.2015	No response		
SNH	30.01.2015	19.02.2015	<p>1.1 Caithness and Sutherland Peatlands Special Protected Area (SPA): Part of Dalchork and eastern part of Borgie lie within the SPA, Rosal lies close to SPA. Birds should not be disturbed (as per FCS Guidance note 32) and the LMP should address detrimental edge effect.</p> <p>1.2 Caithness and Sutherland Peatlands Special Area of Conservation (SAC): Part of Dalchork and eastern margin of Borgie lies within SAC, Rosal lies close to SAC. Blanket bog (classified feature of SAC) could be affected by forestry operations. All works to fallow latest Forest and Water Guidelines to ensure that no enrichment, siltation or pollution affects the SAC. Proposals to restore or improve blanket bog habitat will be welcomed. Otter (also classified feature) may use woodland and carrying out otter survey (and, if relevant, submitting species protection plan) is advised.</p> <p>1.3 Strath Carnaig and Strath Fleet Moors SPA: South east margin of Dalchork lies within, and south west margin lies adjacent to Strath Carnaig and Strath Fleet Moors SPA. LMP should ensure that any existing nest sites within the forest are maintained. Where appropriate, consideration should be given to providing more open range moorland habitat for hen harrier.</p>	<p>1.1 All forest operations will be carried out according to FCS Guidance note 32 (forest operations and birds in Scottish forests). Where appropriate the forest edge will be taken back to buffer high sensitivity sites for waders.</p> <p>1.2 All operations will be carried out as per Forest and Water Guidelines to protect water quality. Areas of blanket bog will be considered for restoration (some has already been subjected to crop removal and drain blocking). Where appropriate (from hydrological connectivity point of view) protective margin of open ground will be created between the productive forest and the designated peatland site. Otter survey will be carried out where appropriate, prior to forest operations taking place.</p> <p>1.3 All operations will be carried according to Guidance note 32 (forest operations and birds in Scotland) and trees will surveyed for the presence of nests prior to operation taking place. One of the aims of the North Sutherland LMP is to provide a corridor of open ground linking Strath Carnaig and Strath Fleet Moors SPA with Caithness and Sutherland Peatlands SPA, significantly</p>

			<p>1.4 Lairg and Brora Lochs SPA: Loch Beannach and Loch Tigh na Creige (component lochs of the above SPA) lie within Dalchork forest. The SPA's been classified for breeding black-throated diver, therefore timing and operational details should take freshwater interest of these birds into account.</p> <p>1.5 River Borgie SAC and River Naver SAC: Both rivers are designated for freshwater pearl mussel and Atlantic salmon; River Borgie id also designated for otter. Best practice should be applied to minimise any impacts on the SACs qualifying features.</p> <p>1.6 Ben Klibreck Site of Special Scientific Interest (SSSI): Ben Klibreck is designated, among other features, for blanket bog which is currently in 'Unfavourable declining' condition due to trampling pressure. Appropriate herbivore management should be established to help blanket bod recovery.</p> <p>1.7 Kyle of Tongue National Scenic Area (NSA): Borgie forest lies approximately 2-3 km away from the NSA. The impact the management will have on NSA should be assessed and management designed to have positive impact on NSA. The assessment should inform compartment design, track construction and fence routes to ensure they are sympathetic to the NSA.</p> <p>2. Deer Management: The proposal will requires deer management plan. The plan should set out how deer will be managed within the woodland over coming years. Impact on neighbouring open land (including designated sites) should be addressed. Details of monitoring and maintenance of fences are to be included within the deer management plan.</p>	<p>increasing hen harrier foraging area.</p> <p>1.4 Best practice guidelines will be adhered to ensure no negative impact of operations on breeding divers.</p> <p>1.5 Forest and Water Guidance and FES guidance Note 5 (Protecting freshwater pearl mussels from siltation during harvesting operations) will be adhered to. As mentioned above in 1.2, otter surveys will be carried out where appropriate and protective measures will be applied if presence of otters is detected within area of operations.</p> <p>1.6 Part of Ben Klibreck SSSI is under grazing tenure, conditions of which (including the number of grazing sheep) are to be re-negotiated later this year. North Highland FD will aim to reduce the number of grazing livestock to help with reducing the overall grazing pressure on the blanket bog. The deer management plan for the SSSI (part within FES landholding is managed under shooting permission) is currently being reviewed as part of East Sutherland Deer Management Group's deer management plan.</p> <p>1.7 The assessment of NSA special qualities will be carried out to inform our management proposals. Number of viewpoints has been identified and visualisations of our management proposals and their impact on landscape will be prepared. Visualisations will be attached to the plan and subject to consultation.</p> <p>2. Deer Management data will be included within the North Sutherland LMP.</p>
SEPA	30.01.2015	27.02.2015	<p>1. General issues: The plan should include a clear analysis of the environmental risks of the proposal accompanied by information on how they will be addressed/mitigated. It should show on maps of 1:2500 or bigger scale details of areas of peat grater than 50cm, watercourse, lochs and wetlands and setback of planting and infrastructure from these. SEPA's general advice should be referred to.</p>	<p>1.The plan will contain analysis of risks and measures to address or, where necessary, mitigate them. The operational details will be provided prior to operations taking place (work plan stage) as it is impractical to do at the land management plan scale. General advice will be adhered to.</p>

		<p>2. Flood risk: The LMP comprises three areas within the River Shin Catchment, River Nave Catchment and River Borgie Catchment where there are records of flood risk issues. The plan should consider impact of works on flood risks to downstream receptors; e.g. impact on flows, sediment transport, capacity of culverts and potential blockage of culverts. Measures may need to be put in place to prevent increase in runoff of woody debris from entering watercourses. Monitoring before, during and after works may need to be implemented in River Borgie Catchment.</p> <p>3. River Basin Management Plan (RBMP) As per The UK Forestry Standard, forest management should protect (and improve) the water environment by ensuring that forestry pressures on the aquatic environment are addressed and thus contributing towards RBMP. Loch Shin, Loch Beannach and River Borgie are currently not at good or better ecological status and might be affected by the LMP proposals.</p> <p>4. RBMP – Loch Shin Catchment: Increasing levels of total phosphorus in Loch Shin resulted in the loch being downgraded from ‘Good’ to ‘Moderate’ status on this parameter in 2011. There is need to understand mechanism of phosphorus loading in Shin catchment and be better placed to make regulatory decisions regarding phosphorus inputs from various development pressures within the catchment. A North Highland Area Management Plan drawn by SEPA and agreed by North Highland Area Advisory Group (including FCS) includes a plan to carry out a study of phosphorus loading in relation to land management in Shin catchment. This work is currently ongoing and will underpin any future decisions on management of phosphorus input into the loch. Forestry activities should adhere to The UKFS and General Binding Rule (GBR) 18 of the Controlled Activities Regulations (CAR). Catchment specific measures to reduce phosphorus run-off to minimum are recommended, with details being worked up at the Work Plan stage. SEPA would welcome a commitment within the North Sutherland LMP, that SEPA will be consulted on the related work plans to ensure that the concerns on phosphorus (high risk activities being felling and fertilisation) are adequately addressed. The LMP should identify the location of any inappropriately designed or redundant structures that could be removed or improved (e.g. upgrading a culvert to allow fish passage or removal of redundant weir). Opportunities for morphological or</p>	<p>2. The Plan will outline general measures to be applied while managing harvesting, restocking and other sites where operations with a potential to impact water flows will be carried out. More site specific measures will be identified during the work plan stage of the planning process and applied if and when needed.</p> <p>3. Water quality is a key objective of North Sutherland LMP. Given the adjacency to Ricer Borgie SAC and River Naver SAC, both of high importance for freshwater pearl mussel and salmonids, the District will ensure that all relevant regulations are adhered to and best practice is applied, in order to ensure minimal impact of forest operations on aquatic environment. The Plan highlights the importance of riparian woodland in protecting water quality (by intercepting pollutants) and generally improving water habitat by creating dappled shade and keeping the water temperature down, and by providing organic nutrients (leaves, woody debris).</p> <p>4. NHFD is working closely with SEPA to monitor water quality in River Shin tributaries and contributed financially to the Loch Shin core sampling project. This project aims at establishing if the increased levels of phosphorus in the loch are connected with neighbouring land use (forestry/farming) or/and fishery management. The samples of the sediments from the bottom of Loch Shin were taken in summer 2015, and the results are expected to be available later in 2016. Presently, the Districts consults its annual fertilising programme with SEPA, in order to agree suitable protective measures. Programme of works which might impact level of phosphorus in Shin catchment (harvesting, fertilising, mounding) will be consulted with SEPA on annual basis, to agree necessary protective measures to be applied during forest operations.</p>
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		<p>ecological improvements should be considered.</p> <p>The LMP should confirm whether or not there are any invasive non-native species (e.g. North American signal crayfish, Japanese knotweed, Himalayan balsam, giant hogweed, rhododendron) are present in the plan area. If there are any, the Plan should outline proposals for control and removal.</p> <p>5. River Borgie – freshwater pearl mussels: Borgie forest drains into River Borgie which is rich in freshwater pearl mussels, highly sensitive to water pollution (siltation from forest operations). Liaison with SEPA's Ecology Unit (Dingwall) is recommended to take into account results of 2014 macrophyte survey.</p> <p>6. Felling and replanting proposals: The LMP should provide information on how protecting the environment has been considered when deciding on the proposals (in relation to timing and size of felled areas). The plan should confirm adherence to the UKFS and related Forestry guidelines and comply with Water Environment (Controlled Activities) (Scotland) Regulations (CAR). The plan should provide clear information of the minimum buffers to be included between the forest edge and each water body or abstraction. Riparian planting would be supported. The plan should identify the % of felling proposed in each water body catchment within a 3 year period. In line with UKFS less than 20% of acidified water body catchments and catchments which are sensitive to nutrient enrichment are felled in any three-year period. If greater than 20% is proposed to be felled in such period, then the plan should include an assessment of the likely effects it may have on local water bodies and design mitigation measures to address them.</p> <p>7. New supporting infrastructure: The plan should include (on map 1:2500 or bigger) any new infrastructure which may be required to facilitate plan proposals (e.g. any new or upgraded trucks, borrow pits etc). Supporting infrastructure should be designed to avoid engineering activities in the water environment wherever possible. All water courses and water bodies, including draining ditches connected to water environment within planted areas should be considered as sensitive to effects from forestry activities and identified on a map of scale 1:2500 or bigger. Engineering activities in or adjacent to water environment are likely to need authorisation under Water Environment (Controlled Activities) (Scotland) Regulations (CAR)</p>	<p>No INNS were found up to date within the North Sutherland LMP area. Further surveys will be carried out periodically.</p> <p>5. All operations carried within River Borgie catchment will adhere to relevant regulations and best practice will be applied to minimise impact of operations on the water environment.</p> <p>6. No waterbodies/catchments within the North Sutherland LMP area suffer from acidification (as confirmed by SEPA in email from 28.01.2016). The timing of felling and the size of coupes within the North Sutherland LMP area is very much dictated by the extent of wind and DNB related damage and the effort to maximise timber recovery from these sites. All relevant regulations will be adhered to in order to minimise any possible negative impact of forest operations on water quality.</p> <p>7. The Plan outlined the location of planned new infrastructure, but given the necessary detailed surveys required to determine the exact route of a new roadlines, it is impossible to provide such level of information at the land management stage of the planning process. The exact route of a new road, location of necessary culverts and/or water crossings, draining ditches, borrow pits etc. will be determined at the work plan stage of the planning process.</p>
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			<p>and adhere to Forest and Water Guidelines.</p> <p>8. Carbon balance and impact on peat: There is a peat bog adjacent to boundary in the North West corner of Dalchork forest, and Borgie forest boundary is adjacent to the SAC designation. The plan should include a map showing peat depth across the site and identify any adjacent bog habitats. Any new planting or replanting proposals should demonstrate how they comply with the <i>Supplementary Guidance to support the FC Forestry and Peatland Habitats Guidance Note</i>. A map should demonstrate that all new planting has avoided peat exceeding 50 cm depth and measures to be taken to protect hydrology of any adjacent bog habitats. The plan should identify areas to be clearfelled and not restocked, outline the aims of peatland restoration and methods to be used.</p> <p>9. Impact on wetlands: The plan should provide opportunities for peatland and wetland restoration and include details of such proposals.</p> <p>10. Use of waste on site, including felling waste: The plan should outline proposals to make use of nay waste wood on the site. These proposals should comply with SEPA's guidance Management of Forestry Waste.</p> <p>11. Pollution prevention and environmental management: Forest activities to be carried out following the best practice guidance outlined in UK Forest Standard Guidelines and other relevant best practice guidance.</p>	<p>8. No new planting proposed on sites adjacent to designated peatland sites. Restock sites in Borgie, die to a landform, have no hydrological connection to adjacent designated site. The LMP proposal includes restoring substantial areas of afforested deep peat to active bog (Dalchork). The proposal gives rational for identifying suitable restoration sites ( based on peat condition, flora, and previous rotation crop yield class), proposes creation of successional, low density woodland on sites where full restoration is unlikely to be successful (due to damage inflicted on peat, lack of hydrological connection to adjacent active/restored bog) and where too slow tree growth rate does not justify restocking with commercial crop. Successional woodland will ensure positive carbon balance on peatland sites unsuitable for restoration, and will provide a rare low density wet woodland and create a buffer between open habitat and productive forestry.</p> <p>9. The Plan gives details of peatland restoration proposals.</p> <p>10. 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 brush 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.</p> <p>11. All relevant regulations will be adhered to and best practice applied in order to prevent ant possible negative impact of forest operations on environment.</p>
Confor	13.02.2015 and 31.07.2015	No response		
The Flow Country River Trust	16.02.2015 and 31.07.2015	04.08.2015	Email from Mr J. Fleming stating that the Trust's interest are focused in Caithness.	(-)
Melness and Tongue Community Trust	31.07.2015	20.08.2015	The Trust's Board welcomes the community and renewable energy development aspects of the plan (Plans's brief). The Trust would like to be informed about of progress with the plan.	A link to up-to-date draft proposals published on FC website sent.

Lairg Community Council	31.07.2015	No response		
Bettyhill, Strathnaver and Altnaharra Community Council	31.07.2015	No response		
Rogart Community Council	31.07.2015	No response		
Tongue Community Council	31.07.2015	No response		
RSPB	31.07.2015	21.08.2015	<p>RSPB broadly supports North Sutherland LMP proposals of peatland restoration on most appropriate sites, creation of habitat linkage between the Caithness and Sutherland Peatlands SPA and the Strath Carnaig and Strath Fleet Moors SPA; establishment of riparian and native woodlands; sustainable, landscape scale approach to deer management; forest management proposals taking into account developing knowledge of carbon sequestration and organic soil preservation; diversification of age and species structure of the forest, and the intention to make the NFE available for renewable energy production provided that the location of proposed developments will not compromise the wildlife interests.</p> <p>There are designated sites with bird interest within and adjacent to the Plan area. RSPB would like to encourage FES to incorporate into the plan measures likely to benefit designated sites and species in the wider landscape.</p> <p>Upland waders are present on blanket bog areas near to all three blocks covered by plan, and on open habitats within NFE boundaries in Borgie and Dalchork. Golden plover and dunlin have strong preference to flat peatland near pools and well away from forest edge. The peatland restoration efforts should be concentrated where there is a hydrological link with adjacent active bogs; existing open bog should be protected from future planting, including incursion of woodland edge habitat into blanket bog.</p> <p>Red and black throated divers use lochs and lochans across Sutherland,; the black throated diver uses those even in close proximity to forests. Forest operations should not increase siltation in the watercourses as it might have negative impact on invertebrate populations (food supply).</p> <p>There is a well-established black grouse population in Dalchork, and sightings have been recorded in Borgie and Rosal. Population</p>	<p>The proposal aims to improve habitat linkage between designated sites and increase the age and species diversity of the forests. The peatland restoration part of the proposal outlines the rationale behind and the location of areas proposed for restoration. As the area of open habitat will significantly increase, so will the suitable waders habitats.</p> <p>Restructuring of the forest will create a wide range of habitats, from open bog, via low density successional woodland and relatively open-ish (with accordingly 40% and 20% of open ground) riparian and native woodlands, to the dense productive conifer stands. The variety of food and shelter available should benefit the black grouse population. Increased areas of native trees and species will benefit bird species nesting and foraging in open woodland habitat.</p> <p>Continuous forest management, with its cycle of felling and restocking will maintain the supply of suitable foraging ground for raptors.</p> <p>Due to the extent of wind damage suffered by all blocks covered by the plan, the supply of mature trees suitable for eagles roosting and nesting is short, and will become even shorter within next 10 years. There are areas in Borgie (long term retention) and Dalchork (Natural reserve) where trees will be kept longer than the normal rotation. As the time passes, young trees will mature, providing more suitable sites for nesting and roosting.</p>

			<p>could get established there, subject to appropriate habitats availability. Black grouse benefits from wide range of different habitats, from open to close canopy.</p> <p>Open woodland habitat support big number of different bird species (including finches, tits, warblers and increasingly rare cuckoo, spotted flycatcher and tree pipit). All these species will benefit from an increase in area of native and riparian woodland. However the peatland interests need to be taken into account where these are proposed, to ensure that there's no drying effect on adjacent peatland sites.</p> <p>Mature conifer trees support populations of common and Scottish crossbills, therefore RSPB welcomes the commitment to maintain productive conifers as an element of forest covered by the North Sutherland LMP. Conifers should be planted where the benefits of peatland restoration would be minimal.</p> <p>RSPB hasn't surveyed the area for presence of birds of prey, but the presence of buzzard, red kite, osprey, kestrel, hen harrier, peregrine falcon and short-eared owl is confirmed. Ospreys had been recorded in all three forests (Borgie, Dalchork and Rosal) and are attracted to mature conifers for nesting. Deer management resulting in deeper heather will increase availability suitable nesting for hen harriers, short-eared owls and merlin. Felling and restocking will temporarily create suitable foraging habitats for many species, therefore it would be beneficial to phase operation to maintain continuous supply of such areas. As White tailed eagle population expands east, the mature c trees in plan area might become attractive as nesting/roosting places. Golden eagle is likely to use open areas at the margin of forest as a foraging ground.</p>	
The Highland Council Access Officer	31.07.2015	17.08.2015	<p>1. Dachork</p> <p>The forest has a limited recreational value, however the southern part close to Lairg is popular dog walking destination. The A836 road runs the length of the forest making it highly visible and accessible to the public. There is probably no demand for formal promotion of the forest track network, but the management of the access to the forest may allow improved visitor experience (e.g. allowing for parking in the bell mouth of the larger forest entrances).</p> <p>There is Public Right of Way from Crask to Loch Choire, the Dalnessie PRW and possible PRW from Saval to the A836. Currently there's no core paths in the forest but the Saval route is</p>	<p>1. The National Forest Estate welcomes walkers, cyclists and riders under the Scottish Outdoor Access code. All forest roads can be used by the public, providing the temporary prohibition signs erected prior to forest operations are respected.</p> <p>A new car park will be created in the north end of Dalchork (providing a view point from which a vast open area of peatland will be visible).</p> <p>Proposed windfarm (if approved) will be located in area which is in large already clearfelled (as a result of peatland restoration project and due to clearance of crops affected by windblow DNB); the windfarm proposal states that it will allow for planting around the turbines (outside necessary buffers), but significant area of the</p>

			<p>under consideration. In LMP, these routes should have slightly stronger emphasis on public access than the wider track network. There is a large scale wind farm development proposal for Dalchork. Big scale clearfelling usually connected with such developments are likely to alter the forest significantly; key hole felling to allow turbine installation would create a more diverse area from recreational point of view.</p> <p>Currently there's no signage informing the public about the local names etc. Introducing any, even most basic signs would be welcomed.</p> <p>2. Rosal Rosal Clearance Village is the main focus of recently altered FC's landholding south of the B871. The assumption is that light touch continuous cover management will be applied around the village and that the path network will be improved during the life of LMP; they are part of the Council's core path plan and Strathnaver trail. Land to the north of B871 is under crofting tenure and the LMP will have little influence on the management of the area. The main recreational interest in that area is of Public Right of War along the east bank of River Naver – any planting or fencing proposals should consider the public right of way.</p> <p>3. Borgie There are promoted recreational facilities on both sides of River Borgie. They are and should remain promoted from main A836 road. The core path in Borgie Glen is promoted alongside a new short trail to 'The Unknown' sculpture; long promoted route is an asset an area as there is little managed recreational facilities offering such length of route in the area.</p>	<p>proposed windfarm development area is marked as a peatland restoration zone (due to the peat depth and conditions). Given the challenging financial climate and relatively low public interest, there are no plans to introduce and form of signage in Dalchork.</p> <p>2. Due to the extent of wind damage inflicted on the forest around the Clearance Village, managing the forest under continuous cover regime is currently impossible. Removal of damaged trees was carried out following the catastrophic storm (January 2015) to allow for safe access to the heritage site, but the trees remaining on the ground are relatively unstable and are to be felled within this Plan period. We're proposing to restock the area around the village with conifers (mostly Scots pine) and increased proportion of native broadleaved trees – such approach might allow for managing the area under continuous cover regime in next rotation. The core path network is currently under review. NHFD will undertake works necessary to keep the paths open to allow for public access.</p> <p>3. Borgie will remain the main FE owned recreational provision in North Sutherland. The forest road network is currently designated as a core path (again, the Highland Council is currently reviewing the wider core path network in the Highlands). Given the challenging financial climate, currently there is no plan to promote the long route.</p>
North Sutherland Community Forest Trust	31.07.2015	No response		
Borgie River Mr Martin Ward	31.07.2015	No response		
Scottish Water (James Stoddart)	31.07.2015	17.08.2015	Scottish Water highlighted Loch Beannach (Dalchork) as a drinking water source. Query about the timing operation around the loch.	The proposal is currently (August 2015) in it's draft stage and the timing (felling phases) has not been agreed yet.
Scottish Water	31.07.2015	25.08.2015	Comments for Borgie and Rosal: According to Scottish Water's sources there are no Scottish Water's water abstraction sources which are designated as Drinking Water Protected Areas under Water Framework Directive in these areas that may be affected by the proposed development.	(-)
	31.08.2015	11.09.2015	SW cannot exclude possibility of developing facilities in Borgie	The draft of North Sutherland LMP will be sent to Scottish Water for

			nad/or Rosal, therefore would like to be informed of future development in these blocks.	pre-submission consultation.
Scottish Water	31.07.2015	28.08.2015  11.09.2015	<p>Comments for Dalchork: The proposed area falls within the catchment for a Scottish Water abstraction from Loch Beannach (map of the catchment provided). Scottish Water abstractions are designated as Drinking Water Protected Area (DWPA) under Water Framework Directive. Loch Beannach supplies Savalbeg Water Treatment Works (WTW). It is essential that water quality and quantity in the area are protected. There are some concerns regarding water quality, in particular colour and organics.</p> <p>The information provided up to date indicates that FES recognises the potential effect that forestry operations may have on water quality. Furrow and drain blocking within the DWPA should not impact yield, and is likely to have positive effect on quality. Scottish Water wants to be informed of the extend of drains/furrows to be blocked and timing of work when the information is available.</p> <p>The single point of contact for future operations with a potential to impact on SW's assets in Dalchork: <a href="mailto:protectdwsources@scottishwater.co.uk">protectdwsources@scottishwater.co.uk</a></p>	The North Sutherland LMP proposes felling the crops (outside the plan period) around the Loch Beannach DWPA, and creation of protective buffer of restored peatland, successional, native and riparian woodland, aiming to separate the loch from future forest operations and minimise the potential of any possible negative impact on water quality and quantity.
Clibrig Eatate	11.09.2015	14.09.2015 22.09.2015	Query about new owner of Rosal block (south of the clearance village); no comment to the North Sutherland LMP proposals.	(-)
Altnaharra Estate	04.09.2015  20.10.2015	15.10.2015  21.10.2015	<p>General support for creation of riparian woodland along River Naver and its tributaries; encouragement for community involvement in managing Rosal; importance of properly erected and/or maintained deer fences as the economically fragile North Sutherland depends to some extent on sustainable and stable red deer population as a source of income, providing full time employment; creation and safeguarding existing FC jobs should be prioritised, along the conservation.</p> <p>The short period of consultation and the omission of few stakeholders was noted.</p> <p>Confirmation that the conifer strips along A836 in part belong to Altnaharra Estate and were planted by the Highland Council to provide protection against snow, which was successful. Proposal to develop a joint long term management approach with FES and the</p>	<p>The Lairg, Rogart, Bettyhill and Tounge Community Councils were sent consultation letters (31.07.2015) to which letters no response was received. Other consultees were added to the consultation list and will be contacted. The short deadline for consultation was for initial comment only; further consultation period will be allowed once the draft plan proposal are published on-line. Public consultation meetings are scheduled for later in the year.</p> <p>We will contact the Highland Council to check what is their view on the conifer strips.</p>

			Highland Council (roads department).	
Bettyhill Open Public Meeting	03.11.2015		A wide range of issues raised at the meeting: <ul style="list-style-type: none"> <li>- Fencing</li> <li>- Management of the log cabins</li> <li>- Woodland expansion on the common grazing</li> <li>- Possibility of waymarking paths in Borgie (finds to be secured by the Community)</li> <li>- Local support for possible windfarm development in Borgie forest;</li> <li>- The local demand for the forest roads to be accessible for recreation purposes</li> <li>- The management of Rosal Village site</li> </ul>	The issues raised were addressed at the meeting.
Lairg Open Public Meeting	17.11.2015		Issues raised: <ul style="list-style-type: none"> <li>- The massive reduction of productive conifers area in Dalchork and it's possible negative impact on employment;</li> <li>- The possible impact of proposed Dalchork windfarm (if approved) on landscape</li> </ul>	The issues raised were addressed at the meeting.
Highland Council (forestry and roads departments)	23.11.2015	23.11.2015	Highland Council has no objection to felling (without restocking proposals) the conifer strips along A836 as they are not judged to be crucial for winter maintenance of the above public road. There are clear environmental and landscape benefits to be gained by removing these trees.	The HC opinion was forwarded to Altnaharra Estate representative on 23.11.2015.
Scottish Water	26.11.2015	01.12.2015	Requested shapefiles showing exact locations of SW assets in Dalchork received.	District GIS technician to check if the data on FES GIS server is actual, and update if necessary.
Altnaharra Estate	03.12.2015		Meeting with Mr Pieter Bakker to discuss the future management of conifer strips along A836 (joint FES and Altnaharra Estate ownership). The importance of those strips for winter maintenance of the public road was stressed, along the strong support from the Altnaharra residents to maintain their protective role.	NHFD is willing to accommodate the wishes of local residents, as the health and safety takes priority over any other objectives. We will consult the Highland Council on the restock proposal.

Scottish Water	08.12.2015	08.01.2016	<p>A map of Loch Beannach DWPA catchment and comments regarding timing of operations on areas adjacent to DWPA. The main comment are:</p> <p>There are some concerns regarding water quality in Loch Beannach. The LMP proposal to increase area of open ground, riparian and native woodland are likely to improve the overall water quality;</p> <p>The felling around Loch Beannach is scheduled to happen between 2026 and 2045, and the drain blocking on areas designed for peatland restoration will take place shortly after felling. The phased approach means that there should be no or only minimal impact on ware yield, but SW requests to be consulted on detailed drain blocking proposal as soon as they are available;</p> <p>Request to consult SW on all forest operation taking place within vicinity of Loch Beannach DWPA and other SW assets located in Dalchork.</p>	<p>We will consult SW an all operations taking place within Loch Beannach DWPA and in the vicinity of SW assets. The consultation will take place at work plan stage of the planning process. The Scottish Water List Of Precautions To Protect Drinking Water And Assets will be adhered to. The List will be attached to The North Sutherland LMP as an appendix.</p>
The Highland Council	12.01.2016	12.01.2016	<p>Given the community interest, HC has no objections to restocking of the conifer strips along A836 with native broadleaves.</p>	<p>The HC opinion forwarded to Altnaharra Estate (13.01.2016). The restock proposal to be discussed with Forestry Commission at the liaison meeting on the 28<sup>th</sup> of Januray.</p> <p>FCS has no objection to restocking with native broadleaves. The proposal will involve planting on open ground in between the road and the existing strips in advance of felling (now scheduled outside plan period) in order to preserve the sheltering effects of trees along the road. The trees will be planted about 10 years in advance of felling, to allow them to establish. The restocking of the shelterbelts will happen shortly after felling.</p>
EON (Dalchork windfarm developer)	25.01.2016	25.01.2016	<p>The draft felling and restock maps for Dalchork accepted.</p>	<p>(-)</p>
SEPA	09.02.2016	23.02.2016	<p>Meeting to discuss the information required by SEPA in 'water' section of the North Sutherland LMP. Protective measures to be agreed for forest operations in River Shin Catchment. The 'water' section of the Plan to be sent to SEPA for comments (sent on 10.02.2016)</p>	<p>No further comments to water related text of the Plan.</p>
Alncharra Estate	12.02.2016	16.02.2016	<p>Altnaharra Estate is flexible if it comes to timing of new planting and 'open to any collaborative action.</p>	<p>Draft new planting proposal sent on 26.02.16. Proposed timing of planting on FE landholding – 2019/2020.</p>

The Highland Council	22.02.2016	24.02.2016	The HC requested that the new planting along A836 will be kept at least 10m away from the verge of the road and that the canopy spread would not cover the road.	The planting proposal was amended to meet the requirements.
SNH	17.03.2016	07.04.2016	SNH pointed out that River Borgie SSSI was missing from Map 3 & 4, and wasn't mention in section 3.2.1. SNH welcomes proposal for peatland restoration, native, successional and riparian woodland; efforts to improve water quality (especially for freshwater pearl mussel and salmonids populations) and enhance habitat for otter, black grouse, waders and divers.	River Borgie SSSI now added onto maps 3 & 4 and section 3.2.1 of the Plan text.
SEPA	17.03.2016	01.04.2016	SEPA is satisfied that the issues raised during the LMP scoping have been adequately addressed.	
EON	17.03.2016	No response		
Scottish Water	17.03.2016	04.04.2016	SW welcomes that their previous comments have been taken into account (Loch Beannach). SW requests that they are consulted prior to any operations taking place within Loch Beannach DWPA.	For operations taking place within/immediately adjacent to Loch Beannach DWPA, SW will be consulted at the work plan stage of the planning process.



## Appendix IV – LMP Internal Consultation

An internal scoping meeting was held on 14th of May 2015 at the NHFD Forest District Office, Golspie with the following officers in attendance:

Tim Cockerill	Forest District Manager
Malcolm MacDougall	Planning Manager
Susan Dolby	Environment Forester
Hazel Maclean	CRT Manager
Hugh Mackay	Programme Manager
Avril Maclennan	Planning Forester
Roddy MacLeod	FM Area Forester
Seam Miller	Operational Forester
Graham Johnstone	Operations Forester
Steve Jack	CRT Stewardship Forester
Stephen Fraser	Forestry Liaison Officer
Derick Macaskill	Wildlife Ranger Manager
Agata Baranska	Planning Forester

Issues highlighted during the scoping meeting were as follows:

- A full review of coupes was undertaken and HMK noted the coupes now in business planning that ideally shouldn't change.
- A review of the stakeholder list was undertaken and neighbours confirmed.
- A review of designations and other environmental constraints took place and the presence of a number of European Protected Species was noted.
- Forest adjacent to designated peatland sites should have the peatland restoration / peatland edge woodland option considered; Following Forest & Water guidelines is essential and suitable riparian woodlands must be put in place.
- SF reported on progress of Dalchork wind farm development.
- CRT confirmed the locations of FCS facilities, core paths and Public Rights of Way. Visitor zoning should be included for these facilities and the rights of way should be protected. Expansion is unlikely due to limited founding & staff resources. Borgie forest is to be the main recreational provision for northern Sutherland. HML expressed concerns that noise from turbines on Dalchork windfarm might have negative impact on visitor experience for cyclist using A836 between Lairg and Altnaharra (popular tourist route)
- Field at Dalnessie junction should be considered for new woodland planting.
- Poor quality, affected by windblow and DNB and difficult to recover crops might have to be mulched.
- MMD noted that new road requirements will have to be carefully considered to avoid heavy investment in areas which will be subject to peatland restoration or peatland edge woodland planting.

Follow up meetings and consultations have been held with Malcolm MacDougall (FD Planning Manager), Neil McInnes (Environment Manager), Roddy MacLeod (FM Forester), Derick Macaskill (FD Wildlife Ranger Manager), Alison Grant and Renate Jephcott (FCS Landscape Architects) to clarify issues and proposals.

**Appendix V**

**SCOTTISH WATER LIST OF PRECAUTIONS TO PROTECT DRINKING WATER AND ASSETS**

Scottish Water is required to ensure that the proposed activity does not impact on the ability of Scottish Water to meet its regulatory requirements.

The regulations relating to the quality of drinking water supplied by Scottish Water are the Water Supply (Water Quality) (Scotland) Regulations 2001. Quality Standards are derived from the European Drinking Water Directive 98/83/EC. Water Treatment Works are designed to treat water quality envelopes and are based on site specific raw water quality. If raw water deteriorates outside of the envelope, it can impact on the ability of the works to supply drinking water to customers which complies with the required standards.

Under Article 7 of the Water Framework Directive, waters used for the abstraction of drinking water are designated as Drinking Water Protected Areas (DWPA). The objective is to ensure that any activity does not result in deterioration of waters within the DWPA. Examples of deterioration include; if a source requires to be abandoned and an alternative used to provide the supply; water abstracted has to be blended with water abstracted from another source; additional purification treatment has to be applied; or the operating demand on the existing purification treatment system has to be significantly increased. If an activity falls within a DWPA, it is essential that water quality and quantity are protected.

If an activity is located within close proximity to water or waste water assets, it is essential that the assets are protected from damage. You can order copies of our water or waste water network drawings from the undernoted Asset Plan Providers, who have several years of experience supplying asset plans to the utility and developer industries and are ready to take your enquiry. This is distinct from your rights to seek access to and inspect apparatus plans at Scottish Waters area offices, for which no charge is applied.

**Site Investigation Services (UK) Ltd**

Tel: 0333 123 1223

Email: [sw@sisplan.co.uk](mailto:sw@sisplan.co.uk)

[www.sisplan.co.uk](http://www.sisplan.co.uk)

**National One-Call**

Tel: 0844 800 9957

Email: [swplans@national-one-call.co.uk](mailto:swplans@national-one-call.co.uk)

[www.national-one-call.co.uk/swplans](http://www.national-one-call.co.uk/swplans)

If assets are located in the area please contact or write to the **Scottish Water Service Relocation team** via [service.relocation@scottishwater.co.uk](mailto:service.relocation@scottishwater.co.uk) at your earliest convenience, regarding mitigation measures.

The following details a list of possible precautions and protection measures to be considered to ensure that the aforementioned does not occur or affect Scottish Water DWPAs and assets.

- You should at all times allow Scottish Water access to assets belonging to Scottish Water and must avoid the obstruction or hindrance to them.
- You will give full facilities to Scottish Water and our representatives to determine by inspection or otherwise whether our assets and/or pipelines are protected and whether special requirements of Scottish Water are being observed.
- Scottish Water will not accept liability for any costs incurred by you and your contractor in fulfilling any of these requirements.
- If a connection to the water or waste water network is required, you must make a separate application to the Customer Connections section for permission to connect. It is important to note that the granting of planning consent does not guarantee a connection to Scottish Water assets.
- The proposed timing of the works to be submitted to Scottish Water in advance. Scottish Water to be notified prior to any activities commencing on site and upon completion.

- In the event of an incident that could impact on Scottish Water, notify us without delay, using the Scottish Water Customer Helpline Number 0800 0 778 778 and the local contact if known.

### **Specific precautions for drinking water during forestry activities**

Please notify Scottish Water of the expected start and completion dates.

Locations where public water supplies may be vulnerable should be identified and the impact assessed. In particular:

- Any impact to the hydrology of the area should be assessed throughout all stages of the site's development and operation. This should include natural drainage patterns, base flows / volume, retention / run off rates and potential changes to water quantity. Drainage should not be directed into adjacent catchments but retained within the existing catchment.
- It is recognised that forests can assist with the protection of water quality. However, there can also be potential impacts such as sediment delivery, nutrient enrichment, fuels oils/lubricants, pesticides, fertilisers, etc. Sediment can discolour water and have a high content of nutrient, carbon, metal (such as iron and manganese) or pesticide, which can seriously interfere with water treatment. Any alterations to the pH of the watercourses within the catchments could also impact on the treatment works. Alterations to water quality can lead to a failure of microbiological and chemical water standards. Any potential pollution risk which could affect water quality should be considered.
- If the catchment is deemed susceptible to acidification a catchment-based critical load assessment may be required. This will help protect water supplies from acidification and related effects on the solubility of aluminium and manganese.
- Where there are areas of organic / organo-mineral soils, there should be an assessment of the potential release of colour and dissolved organic carbon that could impact on water quality as a result of changes to hydrology and/or physical disturbance. This will include during and following the forestry activities. Minimise disturbance of peat where possible or minimise areas of exposed peat where possible (e.g. avoid cutting ditches through peat where possible). Consider the use of hessian or Jute matting to protect areas of exposed peat and encourage re-vegetation.
- Mitigation measures to ensure minimum pollution to watercourses should be highlighted and adopted. They should be regularly checked, maintained and improved if pollution occurs.
- Please ensure there is strict adherence to the current edition of the Forestry Commission (FC) Forests and Water Guidelines and the General Binding Rules for forestry. You should also follow any other appropriate General Binding Rules under the Controlled Activities Regulations and follow the guidance provided by the Scottish Environment Protection Agency (SEPA) on pollution prevention, visit [www.sepa.org.uk/guidance/ppg/index.htm](http://www.sepa.org.uk/guidance/ppg/index.htm)
- Minimum buffer widths from forest edge to watercourses or abstraction points, as detailed within Table 5.1 of the 5<sup>th</sup> Edition of the Forest and Water Guidelines, should be adhered to.
- As detailed within the 5<sup>th</sup> Edition of the Forest and Water Guidelines, forest drainage should be planned and, where necessary, existing drains should be realigned to ensure that water is discharged slowly into buffer areas and not directly into watercourses. We would also request this for new drains.
- Any new road infrastructure should take into account local watercourses that are feeding into the watercourses/reservoirs that Scottish Water abstract from. Any crossing of these watercourses should be kept to a minimum. Pollution prevention measures should be put in place at each crossing point and silt traps, or equivalent, should be constructed at regular intervals to minimise the risk from pollution.

- Once constructed, site roads should be regularly maintained to ensure minimal erosion and hence pollution, from the road surface. Site roads should be constructed from inert, non-metalliferous material, with low erodibility and low sulphide content.
- No refuelling or storage of fuel or hazardous materials to take place within the catchment area. If this can be demonstrated to be impracticable, then the appropriate SEPA Pollution Prevention Guidelines 2, 7, 8, 21 and 22 should be followed, with 50m buffers from all surface watercourses, groundwater borehole abstraction points and springs. Oil storage should be in accordance with The Water Environment (Oil Storage) Regulations (Scotland) 2006. There should be dedicated areas created. Spill kits to be located within all vehicles, plant and high risk areas.
- Site pollution prevention plans and contingency plans should include the Scottish Water Customer Helpline Number 0800 0 778 778 and the local contact details.

#### **Specific precautions for water mains, waste water mains and other assets**

- Scottish Water assets and structures such as underground valves and pipes should be located and marked prior to any site activity.
- The offset distance has to be agreed in advance by Scottish Water. All structures and ground disturbance must be a minimum distance of 10 metres from the nearest raw water main or water main. All structures must be a minimum distance of either, 3 metres or depth plus 1 metre, whichever is greater, from the nearest sewer. Scottish Water reserves the right to ask for increased offset distance to suit specific circumstances.
- No stationary plant, equipment, scaffolding, construction or excavated material, etc. should be placed over or close to any Scottish Water assets.
- Special care must be taken to avoid covering or filling Scottish Water assets. Arrangements for altering the level of any chambers must be made in agreement with Scottish Water and constructed in accordance with our specifications. You will have to cover the costs of this work.
- Excavation or pumping should not be carried out in the proximity of a water or waste water main without due notice having been given to Scottish Water. You will then be asked to comply with our requirements for the particular situation. Special care should be taken to prevent the removal of ground support systems. If these are exposed during excavation work, they must be supported and re-covered according to our requirements.
- In the event of any of our assets being damaged, full details must be passed immediately to our local Operations team. No-one can interfere with or operate any Scottish Water apparatus.
- You must provide us with adequate notice and full information regarding all proposals for piling or other construction methods that may create vibrations in SW pipelines or ancillary apparatus. It is imperative that your methods of construction adhere to the accepted SW standards in order to minimise vibrations and their effect on the pipelines which could create damage or leakage.
- When construction plant is crossing over Scottish Water's existing apparatus, you should ensure the effective use of temporary protection to spread the weight on the water pipes and sewers to within safe working limits. Scottish Water requires that any proposals be subject to written acceptance by Scottish Water.
- You or anyone working for you should not interrupt the flow of water or waste water within Scottish Water's mains or sewers
- You should at all times allow Scottish Water access to its assets. You must avoid the obstruction or hindrance to the prompt and efficient use and manipulation of valves, hydrants, meters or other apparatus, water mains. There should be no interference with the free discharge of scours from water mains.

## Appendix VI: Archaeological Record

Designation	SAM Number	Feature description/location	Grid reference
Scheduled Monument	5663	Souterrain and settlement, Cracknie, Borgie	NC 6654 5092
Scheduled Monument	2510	Deserted township, Rosal	NC 6890 4159
Scheduled Monument	2515	Hut circles and clearance cairns, Rosal	NC 6874 4076
Scheduled Monument	5081	Loch Beag na Furalachd, cairn and shielings, Dalchork	NC 5984 1489
Scheduled Monument	5159	Loch Beag na Fuaralachd shielings, Dalchork	NC 6008 1492
Scheduled Monument	5300	Cnoc a' Bhreac-leataid shielings and cairnfield, Dalchork	NC 5936 1386
Scheduled Monument	4563	Dalnessie settlement, Dalchork	NC 6207 1470
Scheduled Monument	5154	Achadh nan Eun shielings, Dalchork	NC 6261 1258
Scheduled Monument	5093	Meall Meadhonach, settlement and shielings, Dalchork	NC 6190 1259
Scheduled Monument	5161	Meall Meadhonach, sheepfold, Dalchork	NC 6051 1245
Scheduled Monument	5194	Meall Meadhonach, hut circle and field system, Dalchork	NC 6068 1198
Scheduled Monument	4560	Meall Meadhonach, hut circles, field system & shielings, Dalchork	NC 6122 1131
Scheduled Monument	5090	Creagan Tigh na Creige, Dalchork	NC 6155 1034
Scheduled Monument	5078	Loch Tigh na Crieg farmstead, Dalchork	NC 6150 0995
Scheduled Monument	5309	Loch Tigh Na Creige, hut circle, Dalchork	NC 6182 0971
Scheduled Monument	5160	Loch Tigh Na Creige, sheepfold, Dalchork	NC 6186 0963
Scheduled Monument	4569	Loch Tigh Na Creige, house, Dalchork	NC 6214 0969
Scheduled Monument	5162	Tighcreag, hut circle, Dalchork	NC 6249 0971
Scheduled Monument	5563	Altbreack, homestead, Dalchork	NC 5925 1024
Scheduled Monument	1829	Altbreack, broch, Dalchork	NC 5911 1035

**Appendix VII : Assessment of the Special Qualities of the Kyle of Tongue National Scenic Area**

Within the area covered by the North Sutherland Land Management Plan, only one forest, Borgie , is located within few kilometres from Kyle of Tongue NSA. The following are special qualities of the NSA that may be affected by the proposals:

Special Quality	Possible effects (positive and negative)	Any mitigation or enhancement required
1. An ever-present backdrop of mountains.	Forest management in Borgie may have a slight positive affect, as the forest margins are to be realigned to fit more appropriately with the landform, improving the setting of high ground to the south of the Borgie block. This may be visible from more elevated parts of the NSA.	N/A
2. The Kyle – a link from an inhabited coast to a wild moorland	Forest management in Borgie doesn't influence this special quality.	N/A
3.Scale, from domestic to monumental	Forest management in Borgie doesn't influence this special quality.	N/A
4. The constantly changing character of the Kyle	Forest management in Borgie doesn't influence this special quality.	N/A
5. Rich variety of coastal scenery	Forest management in Borgie doesn't influence this special quality.	N/A
6. Distinct pattern of settlement	Forest management in Borgie doesn't influence this special quality.	N/A

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## Supporting documents: Designated Site Planning

### Designated sites covered by this document

Caithness and Sutherland Peatlands SPA  
 Caithness and Sutherland Peatlands SAC  
 Caithness and Sutherland Peatlands RAMSAR  
 Lairg and Strath Brora SPA  
 Lairg and Strath Brora SSSI  
 Strath Carnaig and Strath Fleet Moors SPA  
 Strath Carnaig and Strath Fleet Moors SSSI  
 River Borgie SAC  
 River Naver SAC  
 West Borgie SSSI  
 River Borgie SSSI  
 West Strathnaver SSSI  
 Cnoc an Alaskie SSSI  
 Ben Klibreck SSSI

### Dates of plan

Start date of plan: 2016  
 End date of plan: 2021

The Land Management Plan runs for 10 years, however this Designated Site Planning document will be reviewed at year 5 in line with the mid-term review to ensure that it is still fit for purpose.

### Management Aims & Objectives

The aim of this Plan is to fully take into account any management and mitigation required for the designated land on and around the National Forest Estate based on the area covered by the North Sutherland Land Management Plan.

This plan aims to act as a basis for targeted management for the notified features and to recognise other operations which may affect them through general use and management of the land on the National Forest Estate (NFE).

### Section 1 Designated Sites covered by this Land Management Plan

<b>Designated Site Name</b>	<b>PA Site code</b>	<b>Site Type</b>	<b>Total Area of designated site (ha)</b>	<b>Area in this plan (ha)</b>	<b>% Within this plan</b>	<b>% on NFE</b>
Caithness and Sutherland Peatlands SPA	8476	SPA	145516.75	961.13	0.66	0.87
Caithness and Sutherland Peatlands SAC	8218	SAC	143538.70	964.43	0.67	0.88
River Borgie SAC	8356	SAC	32.72	2.69	8.22	8.22
Caithness and Sutherland Peatlands RAMSAR	8412	RAMSAR	143502.79	964.43	0.67	0.88
River Naver SAC	8362	SAC	1066.66	1.13	0.10	0.10
Strath Carnaig and Strath Fleet Moors SPA	9190	SPA	14703.60	8.37	0.06	13.83
Strath Carnaig and Strath Fleet Moors SSSI	9188	SSSI	14703.60	8.37	0.06	0.06
Lairg and Strath Brora Lochs SPA	8522	SPA	286.30	38.75	13.53	13.53
Lairg and Strath Brora Lochs SSSI	8104	SSSI	286.30	38.75	13.53	13.53
West Borgie SSSI	1602	SSSI	2207.85	77.76	3.52	3.52
Cnoc an Alaskie SSSI	369	SSSI	3664.65	104.80	2.86	2.86
River Borgie SSSI	1685	SSSI	32.28	2.69	8.33	8.33
Ben Klibreck SSSI	184	SSSI	8731.85	1080.19	12.37	12.37
West Strathnaver SSSI	1611	SSSI	2709.94	778.56	28.73	28.73

Map 3 (Key Features – Environmental) highlights the location of the above designated sites in relation to the LMP boundary and the NFE management area. The plan also shows the other designated sites in North Sutherland for context.

For further detail on the designations listed in Table 1, refer to the SNH documentation at the SiteLink page at [www.snh.gov.uk/SNHi](http://www.snh.gov.uk/SNHi) and on the North Highland Forest District electronic filing system (T/Environment/Designations).

The remainder of this plan will refer in detail only to the elements of the above designated sites on NFE that have the potential to be directly affected by our management.

### **Section 2 Features on the NFE and condition**

Only features that exist on NFE within this LMP or have the potential to be directly affected by our management operations are listed in the table below:

**Table 2 Features on the NFE within this LMP**

Site Type	Site code	Feature description	SCM Condition (Date assessed)	Condition on NFE	Management Classification (if relevant)
SAC	8356 8362	Atlantic salmon ( <i>Salmo salar</i> )	Favourable Recoverd 2011	N/A	No outstanding remedies
SAC	8356	Freshwater pearl mussel ( <i>Margaritifera margaritifera</i> )	Unfavourable Declining 2009	N/A	Forest and Water guidance and The Water Environment (Diffuse Pollution) (Scotland) Regulations 2008 General Binding Rules will be adhered to.
SAC	8362	Freshwater pearl mussel ( <i>Margaritifera margaritifera</i> )	Unfavourable No change 2003	N/A	Forest and Water guidance and The Water Environment (Diffuse Pollution) (Scotland) Regulations 2008 General Binding Rules will be adhered to.
SAC	8356	Otter ( <i>Lutra lutra</i> )	Favourable maintained 2012	N/A	FC Guidance note 35c: Forest operations and otters in Scotland will be adhered to.

SAC	8218	Otter ( <i>Lutra lutra</i> )	Favourable Maintained 2004	N/A	FC Guidance note 35c: Forest operations and otters in Scotland will be adhered to.
		Marsh saxifrage ( <i>Saxifraga hirculus</i> )	Favourable Maintained 2007	N/A	No outstanding remedies
		Blanket bog;	Unfavourable Declining 2010 Unfavourable Declining 2010	Unfavourable recovering (following peatland restoration project) N/A	No outstanding remedies
		Depressions on peat substrates;	Unfavourable Declining 2010	N/A	No outstanding remedies
		Wet heathland with cross-leaved heath;	Favourable Maintained 2010	N/A	No outstanding remedies
		Very wet mires; Clear-water lakes or lochs	Favourable Maintained 2010	N/A	No outstanding remedies
SPA	8522	Black throated diver ( <i>Gavia arctica</i> )	Favourable maintained 2008	N/A	No outstanding remedies
SPA	9190	Hen harrier ( <i>Circus cyaneus</i> )	Favourable declining 2013	N/A	No outstanding remedies

SPA	8476	Golden plover ( <i>Pluvialis apricaria</i> ) Greenshank ( <i>Tringa nebularia</i> ) Dudlin ( <i>Calidris alpine schinzii</i> ) Black-throated diver ( <i>Gavia arctica</i> ) Red-throated diver ( <i>Gavia stellata</i> ) Wood sandpiper ( <i>Tringa glareola</i> ) Golden eagle <i>Aquila chrysaetos</i> ) Merlin ( <i>Falco columbarius</i> ) Hen harrier ( <i>Circus cyaneus</i> ) Common scoter ( <i>Melanitta nigra</i> )	Unfavourable Declining 2009  Favourable Maintained 2009  Favourable Maintained 2009 Unfavourable Declining 2007  Favourable Maintained 2006  Favourable Maintained 2004  Favourable maintained 2003  Favourable maintained 2004  Favourable maintained 2003  Favourable maintained 2007	N/A	No outstanding remedies
SSSI	184	Blanket bog	Unfavourable declining 2006	Unfavourable declining	The grazing /trampling pressure will be reduced due to reduction in number of animals being grazed there under grazing agreement (sheep); we will continue to manage deer numbers (shooting permission).

### Freshwater pearl mussels

River Borgie and River Naver are among few rivers in Scotland that support large, visible populations of freshwater pearl mussels. Once widely distributed, populations in Europe has sharply declined and Scotland is now considered to be the main European species stronghold. In recent years Scottish population also declined and ceased to breed in many sites. The freshwater pearl mussels can grow to up to 15 cm and live for over 100 years. The adults live attached to or buried in the substrate and filtrate small particles of food from the flowing water. They become mature at about 10-12 years of age and each female can produce between one and four million larvae, that are released in synchrony over one or two days in the summer. Mussel larvae realised to the water must attach themselves to the gills of young salmon or trout in order to develop. Only a small percentage of the larvae will succeed and survive to drop off their fish host and start their sedentary adult life on the riverbed. Their survival is therefore dependant on availability of juvenile salmon and/or trout. The freshwater pearl mussels are also critically dependant on high water quality and suitable river substrates. River Borgie has considerable amount of both adult and juvenile mussels, indicating that the population has the potential to remain viable in the long term. The River Borgie catchment includes extensive tracts of blanket bog, forest of plantation origin (with considerable effort made in recent years to remove non-native conifers away from the banks of the river and it's tributaries, and to create riparian woodland comprising native broadleaved trees), and relatively small area of improved agricultural ground (near the mouth of the river). Throughout it's course, the riverbed is highly varied with number of pools, riffles, rapids and a waterfall, which give a mixture of substrate, from boulders to gravel.

### Atlantic salmon

River Borgie and River Naver SAC were designated (among other reasons) for salmon interest. The designation is recorded as being in an 'Favourable Recovered' condition by the most recent SCM in 2011.

River Borgie is managed as a sporting fishery for Atlantic salmon. This includes limited engineering works in the river channel as repairs and maintenance of existing weirs and bank stabilisation works. The bank vegetation is managed to allow access for fishing and improve productivity. River Borgie is stocked with native juvenile salmon.

### Assemblages of breeding birds

The variety of bird species present on Caithness and Sutherland Peatlands SPA, SAC & Ramsar and SSSIs within and adjacent to the forest blocks covered by North Sutherland LMP (including golden plover, greenshank, dudlin, red- and black-throated diver, hen harrier, merlin and golden eagle) are likely to be affected by forest operations and the extent of plantation forestry. It is recognised that the edge effect posed by plantation edges has influence on breeding birds, but the extent of this is not clear when compared to predation and/or climate change effects. Given that the relationship between the forest edge and each of these breeding birds species is not fully understood, the forest edge, where identified appropriate, will be withdrawn back from the designated feature under an approved LMP by an agreed distance to be determined on a site by site basis using developing best practice. Suitable transitional (successional) woodland will be allowed to develop where appropriate and

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agreed under approved LMP between the open zone and the productive forest edge, softening crop edges and creating habitat for some of the species listed under the breeding bird assemblage feature. This transitional (successional) woodland will aim to create open wet bog woodland, and in the long term be gradually changing towards low density native woodland.

### **Blanket bog**

West Strathnaver SSSI forms part of an internationally important peatland and one of the most extensive areas of blanket bog in the world. The peatlands of Caithness and Sutherland also support internationally important populations of upland birds and otters – species which occur naturally at low densities and require large areas of undisturbed land. The body of peat under the blanket bog is a large store of carbon and the continuous peat-forming process is key to capturing and storing more carbon in the future.

The majority of the blanket bog habitat is dominated by heather, deer sedge and purple moor grass, but there are also areas containing carpets of bog moss, bearberry and dwarf birch.

The extensive wild fires of 2001 and 2007 have caused long-term damage to the vegetation.

Cnoc an Alaskie SSSI contains several types of mire that make up blanket bog feature: watershed mires have developed over gently rounded hill tops; valley-side mires in the slopes and saddle mires in the hollows. A variety of pool systems can be found on site, from highly ordered patterns to apparently random distribution of irregularly shaped pools. Internationally important ladder fens (with species such as mud sedge and slender sedge) occur at a range of altitudes but are generally better represented at lower levels. They are characterised by lots of very narrow (c. 30cm) and shallow (often only few cm) pools arranged parallel to one another. The pools are arranged at 90 degrees to the slope and water tends to flow across them in a similar fashion to water going over a set of steps.

Ben Klibreck SSSI has a range of bog types: watershed, valleys and sloping ground bogs, located at the lower slopes of Ben Klibreck. This gives rise to different surface patterns and pool types, with a variety of blanket bog vegetation, dominated by deer grass, cotton grass and crowberry. An uncommon combination of deer grass/cotton sedge (western type) and cotton sedge/crowberry (eastern type) blanket mire vegetation communities is found at this site. *Callergon trifarium*, a very local montane species of moss confined to the Highlands, occurs in a few base-rich flushes. The blanket bog within this SSSI is under high deer pressure and trampling had created extensive areas of bare peat, leading to the feature being assessed as being in unfavourable declining condition. Part of the Ben Klibreck SSSI within FES ownership is under grazing agreement – in the past number of sheep grazed was too high, but recently the grazing tenant was offered new areas within Dalchork forest (to carry out conservation grazing on archaeological sites), reducing the pressure on SSSI. Deer management on part of SSSI managed by FES is carried out under a shooting permission. East Sutherland Deer Management Group, which covers the area, is currently reviewing its deer management plan and is expected to take the adverse impact caused by deer on the SSSI into consideration.

### **Oligotrophic loch**

These features lie outside NFE. Loch Choire and Loch a'Bhealaich are naturally nutrient-poor lochs, which contain a high diversity of aquatic plants, including the national scarce awlwort. These lochs have clear water, low to moderate level of nutrients and short underwater vegetation. The bottom of these lochs is generally silt, sand, gravel, stones or boulders.

### **Upland birch woodland**

Birch and alder woodland fringe the southern shores of Loch Choire and Loch a'Bhealaich (outside NFE). The woodland is all that remains of once a much larger forest. Areas of mature, open canopy birch and denser sections along rocky bluffs and in gorges. Rowan, aspen, holly, bird cherry and willow are also present, and the relict alder wood is confined to the course of Allt Coire na Farna. The ground flora varies from heath, grassland and bracken to species rich flushes below the crags. In more shaded areas there is a good representation of northern birch wood mosses and ferns including Wilson's Filmy Fern. The overall woodland extent is maintained, however the patches of woodland are becoming fragmented. Grazing pressure varies from moderate to high across the site. Native species cover 95% of the site and larch present on nearby plantations does not appear to be spreading. Overall the upland birch woodland was found to be in unfavourable condition due to the suppression of tree regeneration by grazing animals.

### **Caledonian igneous geology**

An unusual body of rock called the 'Loch Loyal Syenites' occur on the northern slopes of Sron Ruadh, at the southern end of West Borgie SSSI (outside NFE). These rocks were formed when magma was forced upwards (intruded) from deep within the Earth, into cracks in the Earth's crust, where it cooled to form the rocks visible on site today. The rock at Sron Ruadh and around Ben Loyal form the largest area of intruded alkaline rock in the British Isles. Site monitoring undertaken in 2008 has found the Caledonian igneous feature to be in favourable condition (key exposures both visible and accessible).

**Section 3 Pressures and proposed actions**

**Table 3 Pressures and proposed actions**

Site Type	Feature description	Pressures	Proposed action	Timescale	Location Map highlighting work & other key limiting factors
SSSI	Blanket bog	Trampling/overgrazing	The numbers of sheep grazed under grazing agreement on part of Ben Klibreck SSSI owned managed by FES will be reduced by making areas of conservational grazing within Dalchork block available to the grazing tenant. Deer will be managed under shooting permission (East Sutherland Deer Management Group's deer management plan currently under review).	Throughout the life of the Land Management Plan as and when required.	The proposed works are detailed in the Management Coupes and Future Habitats Maps, appended to this plan.
	Assemblages of breeding birds	Forestry operations	Forest restructuring proposal takes into account the well documented effect the plantation type forestry has on the water table on the adjacent non-planted blanket bog and the draft guidance for managing forest edge effect on the notified breeding bird assemblage feature. To relieve the negative effect on water table on adjoining Designated Sites and undesignated active bog sites, FES is committed to forest restructuring under approved LMP, moving forest edge back by agreed distances, to be determined on a site a site basis. Edge effect is considered the main forestry pressure on the breeding bird assemblages feature within the West Strathnaver and West Borgie SSSI. Due to the wide range of bird species that make up the notified breeding bird assemblages and the different requirements for each species, and as a result of previously approved felling and restocking operations, the forest edge, taken away from the open bog habitat, will remain in the same place. In places the native and/or riparian woodland buffer will be created between the productive forestry and open habitat.		
			Game/Fisheries management	Deer management will be undertaken to FES best practice standards to protect tree crops and maintain the quality and structure of open habitats. The area of riparian woodland will increase significantly allowing for better protection of the aquatic environment from any potential negative impact of forest operations.	Throughout the life of the Land Management Plan.
		Plant pests and diseases	Crops will continue to be surveyed for Dothistroma needle blight infection.	Throughout the life of the Land Management Plan.	Not mapped

		Energy production	Management of sites leased to wind farm developers/operators will be covered by Habitat Management Plans, agreed with SNH.	Through the life the Land Management Plan and outwith the Plan period	The area that might be leased to wind farm developers (subject to successful planning application) is marked on Analysis and concept map.
SAC	Atlantic salmon ( <i>Salmo salar</i> )	Diffuse pollution	All operations will be conducted within best practice UKFS and UKWAS standards and we will comply with 'Operations in FWPM Catchments' guidance.	Throughout the life of the Land Management Plan as and when required.	The proposed works are detailed in the Management Coupes and Future Habitats Maps, appended to this plan.
		Forestry operations	All operations will be conducted using best practise and adhering to Forest and Water Guidance. Fragments of riparian woodland were planted with the aim to improve the condition of neighbouring SAC site and to limit the impact of future forest operations on the aquatic environment.	Throughout the life of the Land Management Plan as and when required.	The proposed works are detailed in the Management Coupes and Future Habitats Maps, appended to this plan.
	Freshwater pearl mussels ( <i>Margaritifera margaritifera</i> )	Forestry operations	All operations will be conducted using best practise and adhering to Forest and Water Guidance. Fragments of riparian woodland were planted with the aim to improve the condition of neighbouring SAC site and to limit the impact of future forest operations on the aquatic environment.	Throughout the life of the Land Management Plan as and when required.	The proposed works are detailed in the Management Coupes and Future Habitats Maps, appended to this plan.
		Diffuse pollution	All operations will be conducted within best practice UKFS and UKWAS standards and we will comply with 'Operations in FWPM Catchments' guidance.	Throughout the life of the Land Management Plan as and when required.	The proposed works are detailed in the Management Coupes and Future Habitats Maps, appended to this plan.
	Otter ( <i>Lutra lutra</i> )	Forestry operations	Sites will be surveyed for the presence of otter prior to commencement of forest operations. All operations will adhere to FC Guidance note 35c: forest operations and otters in Scotland.	Throughout the life of the Land Management Plan as and when required	The proposed works are detailed in the Management Coupes and Future Habitats Maps, appended to this plan.
SPA	Breeding waders  Wintering birds	Forestry operations	Edge effect is considered the main forestry operation pressure on the birds breeding on Caithness and Sutherland Peatlands SPA. Due to the wide range of bird species that make up the notified breeding bird assemblages and the different requirements for each species, and that the relationship between forest edge and each of these breeding bird species is not fully understood, the forest edge, where identified appropriate, will be withdrawn back from the designated feature under an approved LMP by an agreed distance to be determined on a site by site basis using developing best practice. Suitable transitional woodland will be allowed to develop where appropriate and agreed under approved LMP between the open buffer zones and the productive forest edge, softening crop edges and creating habitat for some of the species listed under the breeding bird assemblage feature. This transitional woodland will aim to create open wet bog woodland.	Throughout the life of the Land Management Plan as and when required.	The proposed works are detailed in the Management Coupes and Future Habitats Maps, appended to this plan.

		Game/Fisheries management	Deer management will be undertaken to FES best practice standards to protect tree crops and maintain the quality and structure of open habitats.	Throughout the life of the Land Management Plan	Not mapped.
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**Section 4 Operations within the Land Management Plan that could impact on the Designated features on the NFE**

**Table 4 Operations within the LMP that could impact on features on the NFE**

Operation Type	Detailed description of operation and method	Mitigation measures to be applied	Timing	Map reference & other relevant comments
Clearfell of 1 coupe (Borgie) within River Borgie SAC and SSSI. <b>ORC 11</b> (only part of the coupe lies within the SAC/SSSI)	Standard mechanical felling of trees by harvester and transport to roadside by forwarder for onwards transport by lorry.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. We will comply with 'Operations in FWPM Catchments' guidance.	Through the life of this Land Management Plan	Management Coupes maps. (Coupe 27 Felling on Map 7 felling and road construction - Borgie and Rosal)

**Section 5 Operations on the National Forest Estate within the Land Management Plan that could impact on Designated Sites adjacent to the NFE**

**Table 5: Operations that could impact on Designated Sites adjacent to the NFE**

Operation Type / Aspect of forest	Detailed description of issue or operation	Proposed action &/or mitigation	Timing	Map reference & other relevant comments
Clearfell of 4 coupes (Borgie) adjacent to West Strathnaver SSSI (Caithness & Sutherland Peatlands SPA, SAC & Ramsar).	Standard mechanical felling of trees by harvester and transport to roadside by forwarder for onwards transport by lorry.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. FC Guidance Note 32 will be adhered to. No forest operations should take place within 300m of any greenshank nest during the breeding season (15 April – 31 July), golden plover nests (1 April – 31 July).	Through the life of this Land Management Plan	Management Coupes maps. (Coupes 2, 3, 4 and 30 Felling on Map 7 felling and road construction - Borgie and Rosal)
Clearfell of 1 coupe (Borgie) adjacent to West Borgie SSSI (Caithness & Sutherland Peatlands SPA, SAC & Ramsar).	Standard mechanical felling of trees by harvester and transport to roadside by forwarder for onwards transport by lorry.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. FC Guidance Note 32 will be adhered to. No forest operations should take place within 300m of any greenshank nest during the breeding season (15 April – 31 July), golden plover nests (1 April – 31 July)	Through the life of this Land Management Plan	Management Coupes maps. (Coupe 29 Felling on Map 7 felling and road construction - Borgie and Rosal)

Clearfell of 2 coupes (Rosal) adjacent to River Naver SAC	Standard mechanical felling of trees by harvester and transport to roadside by forwarder for onwards transport by lorry.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. We will comply with 'Operations in FWPM Catchments' guidance.	Through the life of this Land Management Plan	Management coupe maps. (Coupes 6 and 31 Felling on Map 7 – felling and road construction – Borgie and Rosal)
Restocking of 2 coupes (Borgie ) adjacent to Wester Strathnaver SSSI (Caithness and Sutherland Peatlands SPA, SAC and Ramsar).	Standard mechanical ground preparation by digger, manual tree planting.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed.	Through the life of this Land Management Plan	Management Coupes maps. (Coupes 3 and 4 Restock on Map 7 restocking - Borgie and Rosal)
Restocking of 4 coupes (Borgie ) adjacent to West Borgie SSSI (Caithness and Sutherland Peatlands SPA, SAC and Ramsar).	Standard mechanical ground preparation by digger, manual tree planting.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. FC Guidance Note 32 will be adhered to.	Through the life of this Land Management Plan	Management Coupes maps. (Coupes 1, 2, 6.and 8 Restock on Map 7 restocking – Borgie and Rosal)
Restocking of 1 coupe (Borgie ) adjacent to River Borgie SAC and SSSI	Standard mechanical ground preparation by digger, manual tree planting.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. We will comply with 'Operations in FWPM Catchments' guidance.	Through the life of this Land Management Plan	Management Coupes maps. (Coupe 1 Restock on Map 7 restocking - Borgie and Rosal)
Restocking of 1 coupe (Rosal) adjacent top River Naver SAC	Standard mechanical (by digger) and/or manual ground preparation, manual tree planting.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. We will comply with 'Operations in FWPM Catchments' guidance.	Through the life of this Land Management Plan	Management Coupes maps (Coupe 11 Restock on Map 7 restocking – Borgie and Rosal)
Creation of new forest road in Dalchork (adjacent to Ben Klibreck SSSI)	Felling (if required) and creation of new road by flattening of a base and then importing quarried material to create a new road suitable for timber haulage.	All work will be risk assessed by the FD Environment Team through the work plan and business plan processes. FC Guidance Note 32 will be adhered to. Water protection measures will be rigorously enforced and UKFS Forest and Water Guidelines will be followed. FC Guidance Note 32 will be adhered to. All works will adhere to the Water Environment (Controlled Activities) (Scotland) Regulations (CAR).	Through the life of this Land Management Plan	Refer to Map 7 Felling and road construction (Dalchork) and Management Coupes maps (Maps 5)

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**Section 6 Appropriate Assessment/s undertaken on work contained within the LMP**

Appropriate Assessment for this Land Management Plan in relation to the River Borgie SAC, River Naver SAC, Caithness and Sutherland Peatlands SPA, SAC & RAMSAR are attached. FES will continue to consult with the FCS Species Ecologist, FWPM Steering Group Project Officer and SNH on any proposed changes to the LMP as per the tolerance table included, and a further Appropriate Assessment will be undertaken if required.

**Section 7 Approvals, agreements & signatures**

**I confirm that the above management plan which covers the sections of Designated Sites shown in Table 1 of this Designated Site Planning Document in the Land Management Plan for East Caithness contains the necessary detail, content and mitigation measures to comply with the statutory requirements contained within the Nature Conservation (Scotland) Act 2004 and in particular in relation to Part 2, Chapter 1, Section 14 (e), which covers consents via an agreed management plan (i.e. "SNH's consent under section 13 is not required in relation to carrying out an operation of the type described in subsection (1) of that section – .....(e) in accordance with any plan relating to the management of land which has been prepared by the public body...and approved in writing by SNH.**

**SNH Signature .....**      **Date .....**

**SNH Name .....**

**SNH Job Title .....**

**Address.....**

**Email .....**

**Contact telephone number .....**

FCS has a corporate requirement under UKWAS (2<sup>nd</sup> edition) and under the FCS Framework Document for FES (2010) to manage all designated sites in accordance with plans approved by the statutory authority, I therefore sign below to approve the contents of this plan in relation to the Designated Sites listed in Table 1 of this Designated Site Planning Document that fall within its boundary on the NFE.

**FCS Signature .....**      **Date .....**

**FCS Name .....**



# Monument Management Plan

## North Highland Forest District 2015

### Vision

We are committed to undertaking conservation management, condition monitoring and archaeological recording at our significant historic assets; and to helping to develop, share and promote best-practice historic environment conservation management. We are proud to support *Our Place in Time: the Historic Environment Strategy for Scotland* and the emerging *Scottish Archaeology Strategy*; and often seek to contribute to the Scottish Archaeological Research Framework.

### General background

The key **UK Forestry Standard (UKFS) good forestry practice requirement** in relation to the protection and conservation of scheduled monuments within our planning framework is that "*[1] Scheduled Monuments must not be damaged and consent must be obtained from the relevant historic environment authority for any works that have the potential to damage the monument*". The key **UKFS good forestry practice requirement** in relation to the management of the historic environment within our planning framework is that "*[4] Forest management plans and operational plans should set out how important historic environment features, including veteran trees, are to be protected and managed*" (UKFS 2011, 13).

The key **UKFS good forestry practice guidelines** in relation to the conservation of the historic environment within our planning framework are that we should "*[18] Aim to maintain the open settings for features of historical interest; where appropriate monitor changes in vegetation and consider using grazing or mowing [cutting or flailing] as part of the management plan*"; and "*[19] Manage public access so that open settings for [relevant] historic features are not subject to erosion or damage caused by visitor pressure*" (UKFS 2011, 22).

# Monument Management Plan

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The **Strategic Directions for Scotland's national forest estate** set out our priorities in terms of integrated land management. The key priorities for the historic environment state that *"we safeguard archaeological sites through our planning and management and recognise special places and features with local cultural meaning"* and that:

- *"we will continue to undertake conservation management, condition monitoring and archaeological recording at significant historic assets; and*
- *that we will continue to work with stakeholders to develop, share and promote best-practice historic environment conservation management"* (FCS 2013, 52).

Forest District Planning and Environment teams will ensure that details of our significant historic assets are included within Forest Design Plans and Land Management Plans. Historic environment features are identified and **protected** within our Work Plans and that damage is avoided during forestry operations; and relevant designated historic assets (and significant undesignated historic assets) are actively managed within a programme of detailed archaeological recording and **conservation** management. Where appropriate, significant historic assets are **presented** to the public as part of the Forest District recreational framework (with interpretation panels and access paths).

Significant archaeological sites will be protected and managed following the UKFS *Forests and historic environment* guidelines (2011), the FCS policy document *Scotland's Woodlands and the Historic Environment* (2008) and the supporting *FES Historic Environment Planning Guidelines* (available from the FCS Archaeologist). Harvesting 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 restocking, work prescriptions remove relevant historic environment features from ground disturbing operations and replanting. Opportunities to enhance the setting of important sites will be considered on a case-by-case basis (such as the views to and from a significant designated site).

# Monument Management Plan

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## Scottish Historic Environment Policy Chapter 5 'The Conservation of the Historic Environment by Government Bodies in Scotland'

### Designated Historic Assets Register

The implementation of SHEP5 requires the establishment of an **inventory of historic assets**<sup>i</sup>. The **Designated Historic Assets Register** contains information regarding all of the designated historic sites on Scotland's national forest estate. It includes sites from:

- **Scheduled Monuments** and **Listed Buildings** (individual designated features with **Monument Management Plans** and **Condition Surveys** respectively);
- the ***Inventory of Gardens and Designed Landscapes in Scotland***;
- the ***Inventory of Historic Battlefields*** (both non-statutory designations best considered by the relevant strategic plan); and also
- significant undesignated historic assets.

We also undertake a programme of detailed archaeological measured survey of our most significant sites in order to enhance the national historic environment record and inform conservation management.

### Forester GIS Heritage Module

The implementation of SHEP5 also required the establishment of a comprehensive GIS based national historic environment inventory for the national forest estate<sup>ii</sup>. The FCS Archaeologist has the overall responsibility for the maintenance and update of the national forest estate **Forester GIS Heritage Module** geodatabase (as *system owner*); Forest District Environment Teams have responsibility for use (as *data owners*).

Any recent archaeological surveys that have been undertaken on behalf of FCS have been incorporated into the Heritage Module geodatabase - 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.

# Monument Management Plan

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## Forest District Monument Management Plans

The implementation of SHEP5 also requires an ongoing programme of conservation management, condition monitoring and archaeological recording at relevant significant designated assets<sup>iii</sup>. The annual **Forest District Monument Management Plan** identifies and records any major conservation works, significant condition monitoring programmes and archaeological measured surveys undertaken. The FD MMP is a collaborative document, referencing our **Forest District Strategic Plans** and Historic Scotland Field Officer reports and condition scores.

The annual **Forest District Monument Management Plan** replaces individual MMPs, enabling a better overview and providing a more dynamic planning document of FD priorities.

# Monument Management Plan

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## North Highland FD MMP 2015

North Highland Forest District has a significant role to play in delivering the protection, conservation and presentation of the historic environment on Scotland's national forest estate.

### Extract from Forest District Strategic Plan

*"The North Highlands is a special place. Today, the Flow Country of Caithness and Sutherland (a candidate for World Heritage Site status), the Assynt Geopark and the many Natura 2000 sites around our coastlines are recognised internationally. Through our land management planning, we will continue to identify where our resources can best be used to restore damaged habitats, protect our existing heritage sites and contribute to species conservation" (2014, 32).*

The **District Specific Actions** set out below reflect the wide range of our activity, including stakeholder involvement, protection mechanisms and specific site-based commitments.

National Key Commitment (Cared for)	District Specific Action
<b>We will safeguard archaeological sites through our planning and management, and recognise special places and features with local cultural meaning</b>	We will review our significant holding of archaeology during land management planning reviews, and create proposals that enhance high priority sites and develop viewing opportunities, thus building on our work with community-based interest groups.  We will continue to survey the National Forest Estate to identify and protect significant new heritage sites.

# Monument Management Plan

## Major Monument Actions

The main objective of historic environment conservation management is to ensure the stable condition of the relevant monuments. In general terms, their condition is monitored by Historic Scotland's Field Officers, who record condition (1-5, good - poor), risk (1-5, low – high) and priority (a score of over 5 has been used to indicate a monument with significant issues) and management recommendations proposed. All intrusive scrub vegetation and tree regeneration will be removed. If required, clearance will occur at least once every year and will be undertaken by FCS Forest District staff or contractors. All scrub vegetation and naturally regenerating trees within the relevant scheduled area will be cut off at ground level using appropriate hand or power tools and removed. Any seedlings will be removed by pulling out by hand. Bracken encroachment shall be controlled within appropriate areas as necessary on an annual basis through strimming and / or chemical spraying, as appropriate. Any harvesting work will be planned and organised to avoid any damage to the relevant monuments in the course of any harvesting and timber extraction. No replanting will take place within any scheduled areas. Major monument action (and associated survey and / or special condition monitoring) is recorded below. Scheduled Monument Consent will be necessary in regard to any works that may cause damage or disturbance within the scheduled area.

Scheduled Monument	NGR	Monument Name (those in bold are / will be highlighted in their respective Land Management Plan)	Major Management Action (year action due) and / or general comments / AMS (Archaeological Measured Survey)	Date of last Historic Scotland FO visit	Condition	Risk	Priority
426	ND047607	Bridge of Broubster, standing stones 1350m NE of		12/05/2009	1	1	1.41
440	ND072592	Carriside, chambered cairn 350m NW of		24/08/2009	1	1	1.41
550	ND205374	Golsary, broch on W bank of Burn of Golsary, Rumster Forest		07/09/2010	2	2	2.83
573	ND212372	Rumster, broch 200m WSW of, Forse		07/09/2010	1	1	1.41
591	ND279424	Toftgun, broch 365m SSE of, Loch of Camster		12/11/2009	1	1	1.41
1672	NH505585	<b>Knock Farril</b> hillfort	AMS (2011); new interpretation (2015)	15/04/2008	2	1	2.24
1758	NC567026	Achany, cairn 890m NW of		05/05/2009	2	2	2.83
1779	NC679390	Clach an Righ, stone circle 400m NNW of Dalharrold		29/09/2004	1	1	1.41

# Monument Management Plan

1784	NC557027	Druim Baile Fuir, stone circle, cairns, hut circles and enclosure		11/04/2007	4	1	4.12
1812	NC574055	<b>The Ord</b> , chambered cairns, cairns, settlements and field systems	AMS (2010); [1] Upgrade access path (this is an aspiration and will need Scheduled Monument Consent).	08/02/2012	2	1	2.24
1829	NC591103	<b>Altbreck</b> , broch 1650m ESE of Dalchork Bridge	AMS (2013); [1] fence area [2] provide conservation grazing [3] monitor impact with fixed point photography.	11/02/2010	2	2	2.83
1885	NH782944	<b>Skelbo Wood</b> , broch 300m SW of Glen Cottage	[1] Archaeological record (2012) [1] fence area [2] provide conservation grazing [3] monitor impact with fixed point photography.	14/09/2006	3	4	5
2395	NH727834	Red Burn, chambered cairn 500m S of Redburn Cottage		09/03/2010	2	1	2.24
2510	NC689416	<b>Rosal</b> , deserted township	ALS (2014); [1] fence area [2] provide conservation grazing [3] provide new interpretation (2015)	10/11/2009	2	1	2.24
2511	NC701360	Bad an Leathaid, deserted township		24/08/2004	2	1	2.24
2512	NC702346	Truderscraig, deserted township, hut circles & clearance cairns		10/11/2009	2	1	2.24
2513	NC688348	Cnoc na h'Iolaire, hut circles & clearance cairns		27/10/2005	3	3	4.24
2514	NC687370	Cnoc na Gamhna, hut circles, burnt mound & clearance cairns	[1] Archaeological survey and mark out [2] careful harvesting of standing timber	29/04/2008	4	2	4.47
2515	NC683407	Rosal, hut circles	Careful harvesting of standing timber and removal of brash and windblow	18/09/2009	3	2	3.61
2517	NC689392	Meall a Choire Bhuidhe, hut circles	Careful harvesting of standing timber and removal of brash and windblow	06/03/2008	5	4	6.4
2518	NC686357	Allt a'Bhealaich, hut circles		10/11/2009	3	2	3.61
2519	NC696334	Cnoc Airigh an Leathaid, hut circles		27/10/2005	5	4	6.4
2520	NC718345	Leathad an Daraich, hut circles		18/09/2009	3	2	3.61
2521	NC673417	Allt Ceann na Coille, hut circles & field clearance cairns	Careful harvesting of standing timber and removal of brash and windblow	26/03/2009	4	4	5.66

# Monument Management Plan

2522	NC685398	Blar na Fola & Breac Dubh, hut circles		18/09/2009	3	2	3.61
2720	NH396628	<b>Little Garve Bridge</b>	Major masonry consolidation (2007)	15/02/2006	5	5	7.07
2914	NH721767	Scotsburn Wood, chambered cairn 550m NNE of Scotsburn House		30/03/2010	2	1	2.24
2915	NH726768	Scotsburn Wood, chambered cairn 820m NE of Scotsburn House		30/03/2010	2	1	2.24
2916	NH728767	Scotsburn Wood, cairn 910m ENE of Scotsburn House		30/11/2005	3	2	3.61
3129	NH747780	Lamington Park, long cairn 950m E of Lochan a'Chlaidheimh		05/03/2008	2	1	2.24
4022	NC303079	Cnoc Chaornaidh, chambered cairn 570m SW of		23/03/2010	2	2	2.83
4023	NC301081	Cnoc Chaornaidh, chambered cairn 560m WSW of		23/03/2010	2	2	2.83
4025	NC302101	Strathseasgaich, burnt mound 500m SW of		23/03/2010	1	1	1.41
4042	NC301091	Cnoc Chaornaidh, cairn 930m NW of		30/07/2008	2	2	2.83
4043	NC311097	Loch Ailsh, chambered cairn 900m SE of Strathseasgaich		23/03/2010	1	1	1.41
4044	NC300102	Strathseasgaich, chambered cairn 700m SW of		23/03/2010	1	1	1.41
4045	NC298084	Cnoc Chaornaidh, chambered cairn 180m NNE of, Stratheskie		23/03/2010	2	2	2.83
4046	NC313079	Allt Eileag, chambered cairn 800m SE of Cnoc Chaornaidh		30/07/2008	2	2	2.83
4054	NC290094	Aultivullin, cairn 650m SE of		30/07/2008	2	2	2.83
4505	NH681942	Creagan Reamhan, farmstead, kiln and fields 300m SSW of		28/03/2008	1	1	1.41

# Monument Management Plan

4560	NC608112	Meall Meadhonach, hut circles, field system and shielings 750m SW of		20/08/2008	2	2	2.83
4563	NC619145	Dalnessie, settlement N of Feith Osdail		22/08/2008	2	1	2.24
4564	NC314091	Cnoc Chaornaidh, chambered cairn, cairn and long mound E of		30/07/2008	3	2	3.61
4569	NC622096	Loch Tigh na Creige, house 200m N of E end of		11/02/2010	2	2	2.83
4727	NH716804	Carn a Chait cairn		30/03/2010	2	1	2.24
4743	NH731786	Provost's Well, hut circles and field system 150m NW of		05/03/2008	2	1	2.24
4750	NH656722	Carn na Croiche chambered cairn		11/05/2009	3	2	3.61
4752	NH730798	Carn Liath long cairn		05/03/2008	1	1	1.41
4760	NH728784	Provost's Well, homestead and enclosure 550m WSW of		05/03/2008	2	1	2.24
4763	NH734834	Redburn Cottage, long cairn 880m SE of		30/11/2005	3	2	3.61
5078	NC614099	Loch Tigh na Crieg, farmstead 600m NNE of NW end of		11/02/2010	2	2	2.83
5081	NC597149	Loch Beag na Furalachd, cairn and shielings 1175m ESE of SW end		20/08/2008	1	1	1.41
5084	NC623139	Achadh nan Eun, shieling 1400m N of		20/08/2008	1	1	1.41
5090	NC615103	Creagan Tigh na Creige, shielings 600m W of		22/02/2010	1	1	1.41
5093	NC619124	Meall Meadhonach, settlement and shielings 900m N of		20/08/2008	1	1	1.41
5153	NC603093	Loch Tigh na Creige, settlement 650m W of W end of loch		11/02/2010	3	2	3.61
5154	NC625124	Achadh nan Eun, shielings		22/02/2010	2	2	2.83

# Monument Management Plan

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5159	NC602146	Loch Beag na Fuaralachd, shielings 1000m SW of SW end of		22/08/2008	1	1	1.41
5160	NC618096	Loch Tigh na Creige, sheepfold 300m NW of NE corner of		11/02/2010	2	1	2.24
5161	NC604124	Meall Meadhonach, sheepfold 1550m NW of		22/08/2008	2	1	2.24
5162	NC624097	Tighcreag, hut circle 500m WSW of		11/02/2010	3	2	3.61
5194	NC607120	Meall Meadhonach, hut circle and field system 1200m WNW of		22/02/2010	2	1	2.24
5299	ND058593	Lorg an Fhamhair, footprint carving		16/03/2010	1	1	1.41
5300	NC589138	Cnoc a' Bhreac-leathaid, shielings and cairnfield 700m NNE of		22/02/2010	2	2	2.83
5301	ND176492	Halsary, standing stones 450m WNW of and 620m NW of		24/08/2009	1	1	1.41
5305	ND073593	Carrside, hut circle 350m N of		24/08/2009	1	1	1.41
5306	ND048607	Bridge of Broubster, limekilns 1450m ENE of		12/05/2009	1	1	1.41
5309	NC618097	Loch Tigh Na Creige, hut circle 350m N of NE corner		11/02/2010	2	1	2.24
5401	NC600149	Loch Beag na Fuaralachd, prehistoric settlement 950m SW of SW end of		22/08/2008	1	1	1.41
5406	ND067593	Carrside, cairns 750m NW of		24/08/2009	2	1	2.24
5462	NH580980	Invershin Primary School, settlement 760m NE of and 750m ENE of		05/05/2009	3	2	3.61
5470	NH586966	Invershin Farm, settlement and burnt mound 1200m E of		05/05/2009	2	2	2.83
5483	NH761932	Carn an Fheidh long cairn		29/04/2009	1	1	1.41

# Monument Management Plan

5484	NH786942	Glen Cottage, long cairn 520m SE of		28/03/2008	2	2	2.83
5493	NH771897	Davochfin, chambered cairn 700m NNW of		24/04/2009	2	2	2.83
5497	NH579965	Invershin Farm, settlement and burnt mound 500m E of		05/05/2009	2	1	2.24
5498	NH579977	Invershin Primary School, settlement 600m E of		05/05/2009	3	2	3.61
5563	NC592102	<b>Altbreck</b> , homestead 1800m ESE of Dalchork Bridge	AMS (2012) [1] fence area [2] provide conservation grazing [3] monitor impact with fixed point photography.	11/02/2010	2	1	2.24
5564	NC699438	Dalvina Lodge, hut circles 320m SE and 450m SE of		09/04/2010	2	2	2.83
5565	NC698428	Dalvina Lodge, settlements 700m SSE of and 1050m S of		09/04/2010	3	1	3.16
5573	NH772926	Proncy, hut circle 330m NNE of		18/03/2008	1	1	1.41
5627	NC693428	Dalvina Lodge, hut circle and field system 1130m SSW of		09/04/2010	1	1	1.41
5628	NC697426	Dalvina Lodge, hut circle 1300m S of		09/04/2010	1	1	1.41
5663	NC665509	<b>Cracknie</b> , souterrain and settlement	AMS (2012)	09/04/2010	1	1	1.41
5799	ND285409	Toftgun, cairn and shieling 1950m SSE of		12/11/2009	1	1	1.41
5898	NH771892	Camore Wood settlement	AMS (2012) [1] consider conservation grazing [2] monitor impact with fixed point photography	29/04/2009	3	3	4.24
10942	NH685867	Creag an Fhithich, fort, Dounie Wood	AMS (2013)	09/03/2010	2	2	2.83
11056	NH411566	Carn na Buaile, fort 750m NNW of Comrie, Contin		15/04/2009	2	2	2.83

# Monument Management Plan

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## Listed Buildings

HB Number	Grid Ref	Designation	LB Name	Comments
52317	NH688744	A	Inchindown Underground Fuel Reservoir	Underground and unused; managed decay.

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<sup>i</sup> [5.11] Organisations must be aware of the designated historic assets in their estate and should either establish and maintain an inventory of assets, or ensure that their existing property/asset management systems take account of historic aspects. Such assets might include: a building or group of buildings; part of a building (eg a retained façade); an individual archaeological site or monument or a group of them. Priority in all activities should be given to designated assets (scheduled monuments; listed buildings; conservation areas; gardens and designed landscapes or battlefields on non-statutory Inventories (see Chapter 2)). This record should where possible incorporate a statement of the asset's significance based on available information.

<sup>ii</sup> [5.12] Historic assets that are not scheduled, listed or on non-statutory Inventories – particularly archaeological features – may be material considerations in the planning system or require mitigation in advance of development and bodies should normally also record the location and, if known, the extent of such assets. These basic data are available from RCAHMS and from local Historic Environment Records.

<sup>iii</sup> [5.15] A fundamental requirement of the SHEP is to maintain a system of regular condition surveys for designated assets (no more than 5 years apart), appropriate to the sort of historic asset - buildings will require a very different approach from, for instance, archaeological earthworks. Such a survey cycle should not replace any more intensive programme of inspection, for example for health and safety reasons such as to ensure that stonework is stable. These reports should identify and prioritise necessary repair and major maintenance requirements.

## North Sutherland Land Management Plan 2016 - 2026

<b>REQUEST FOR DETERMINATION UNDER THE E.I.A. (FORESTRY) (SCOTLAND) REGULATIONS 1999</b>	
OPERATION	<b>Road Construction</b> (please see Maps 7 -Planned Operations)
LOCATION	North Sutherland Forests
GRID REFERENCE	NC 5638 2361
IS THE LOCATION OF THE PROPOSED WORKS WITHIN A "SENSITIVE AREA", AS DEFINED IN THE REGULATIONS? IF SO, WHAT TYPE OF SENSITIVE AREA?	No, all proposed roads fall outwith the Caithness and Sutherland Peatlands SPA & SAC and associated SSSIs
IF OPERATION IS AFFORESTATION, DEFORESTATION OR FOREST QUARRIES, WHAT AREA IS INVOLVED?	N/A
IF OPERATION IS FOREST ROADS, TRACKS OR PATHS, WHAT IS SPECIFICATION AND WHAT LENGTH & WIDTH IS INVOLVED?	<b>Forest Road Construction (Cat 1a)</b> <b>Borgie south-east</b> - 780m long - 15m wide at NC 6650 5151 <b>Dalchork north</b> - 630m long - 15m wide at NC 5368 2354 <b>Dalchork north-east</b> - 850m long - 15m wide at NC5422 2258 <b>Dalchork - South Coire</b> - 1250m long - 15m wide at NC 5921 1947 <b>Dalchork - Loch na Fuaralachd</b> - 600m long - 15m wide at NC 59231580 <b>Dalchork - Loch Dail na Copaig</b> - 550m long - 15m wide at NC 5719 1496 <b>Dalchork south-east</b> - 200m long - 15m wide at NC 6180 0989 <b>Dalchork south</b> - 203m long - 15m wide at NC 5790 0812 <b>Dalchork west</b> - 220m long - 15m wide at NC 5338 2166
IS THE PROPOSED OPERATION IMMEDIATELY ADJACENT TO AN AREA OF THE SAME PROJECT TYPE WHICH HAS BEEN COMPLETED SINCE 6TH SEPT.1999? IF SO, GIVE DETAILS.	All of the proposed roads are extension of existing roads.
PROPOSED TIMING	Roading - 2016 to 2026
<b>STATE ANY PERCEIVED IMPACT ON THE FOLLOWING:</b>	
ARCHAEOLOGY	No impact is anticipated. Full GIS record exist and archaeology will be identified by workplan process and walk over survey prior to commencement.
CONSERVATION	No environmental impact is anticipated. Full GSI record exists and species/habitat interest will be identified by workplan process and walk over survey prior to commencement.
LANDSCAPE	No landscape impact is anticipated from internal roading.
WATER	No impact is anticipated.
RECREATION / ACCESS	The expansion of the forest road network will improve the access and recreational value of the forest
PEOPLE	No issues foreseen
OTHER INFORMATION	None
SIGNED & DATED	Agata Baranska, 14th of March 2016

<b>REQUEST FOR DETERMINATION UNDER THE E.I.A. (FORESTRY) (SCOTLAND) REGULATIONS 1999</b>	
OPERATION	<b>New Planting</b> (please see Map 8 - New Planting for detail)
LOCATION	North Sutherland Forests
GRID REFERENCE	NC 5753 1375 & NC 5233 2525
IS THE LOCATION OF THE PROPOSED WORKS WITHIN A "SENSITIVE AREA", AS DEFINED IN THE REGULATIONS? IF SO, WHAT TYPE OF SENSITIVE AREA?	No
IF OPERATION IS AFFORESTATION, DEFORESTATION OR FOREST QUARRIES, WHAT AREA IS INVOLVED?	7.22 ha
IF OPERATION IS FOREST ROADS, TRACKS OR PATHS, WHAT IS SPECIFICATION AND WHAT LENGTH & WIDTH IS INVOLVED?	<b>N/A</b>
IS THE PROPOSED OPERATION IMMEDIATELY ADJACENT TO AN AREA OF THE SAME PROJECT TYPE WHICH HAS BEEN COMPLETED SINCE 6TH SEPT.1999? IF SO, GIVE DETAILS.	No
PROPOSED TIMING	New planting - 2018 to 2023
<b>STATE ANY PERCEIVED IMPACT ON THE FOLLOWING:</b>	
ARCHAEOLOGY	No impact is anticipated. Full GIS record exist and archaeology will be identified by workplan pprocess and walk over survey prior to commencement.
CONSERVATION	Positive impact is anticipated, with an overall increase of afforested area and increased carbon sequestration (planting south of Dalnessie junction). New planting along A836 and subsequent replacement of existing conifer shelterbelts with native species will decrease the risk of non-native conifer trees regenerating on designated sites (Cnoc an Alaskie SSSI to the west and Ben Klibreck SSSI to the east).
LANDSCAPE	No landscape impact is anticipated from new planting south of Dalnessie junction. Positive impact anticipated from new planting along A836, as the proposed planting will be soften the existing conifer shelterbelts, and once they are felled (outside the Plan period), replanting them with native species will make them less intrusive in the landscape.
WATER	No impact
RECREATION / ACCESS	No impact
PEOPLE	No impact envisaged from planting to the south of Dalnessie junction. The new planting along A836 will be undertaken as a result of public consultation; during which it become clear the residents of Altnaharra view the existing shelterbelts as crucial in preventing snow buil-ups on the public road. In order to establish trees capable of maintaining the sheltering function, the new planting will be carried out well in advence of felling of the existing shelterbelts.
OTHER INFORMATION	None
SIGNED & DATED	Agata Baranska, 14th of March 2016

**Forestry Commission Scotland**

**Appropriate assessment of forestry proposals which are likely to have a significant effect on a European site.**

(The Conservation of Natural Habitats, &c.) Regulations 1994. Regulation 48.)

**1a. Name of European site affected by the application and current designation status.**

1. Caithness and Sutherland Peatlands SPA, SAC & RAMSAR

**1b. Name of Component SSSI if relevant**

Wester Strathnaver, West Borgie, Cnoc an Alaskie

**2. Features of European interest, whether priority or non-priority; and conservation objectives for qualifying interests**

**Conservation objectives for qualifying interests:**

**a) Caithness and Sutherland Petlands SPA:**

- Black-throated diver (*Gavia arctica*)
- Common scoter (*Melanitta nigra*)
- Dunlin (*Calidris alpina schinzii*)
- Golden eagle (*Aquila chrysaetos*)
- Golden plover (*Pluvialis apricaria*)
- Greenshank (*Tringa nebularia*)
- Hen harrier (*Circus cyaneus*)
- Red-throated diver (*Gavia stellata*)
- Short-eared owl (*Asio flammeus*)
- Wigeon (*Anas penelope*)
- Wood snadpiper (*Tringa glareola*)
- Merlin (*Falco colimbarus*)

**To avoid deterioration of the habitats of the qualifying species (listed above) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.**

**To ensure for the qualifying species that the following are maintained in the long term:**

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

**b) Caithness and Sutherland Peatlands SAC:**

- Acid peat-stained lakes and ponds
- **Blanket bog**
- Clear-water lakes and lochs with aquatic vegetation and poor to moderate nutrient levels
- Depressions on peat substrates
- Very wet mires often identified by an unstable 'quaking' surface
- Wet heathland with cross-leaved heath
- Otter (*Lutra lutra*)
- Marsh saxifrage (*Saxifraga hirculus*)

**To avoid deterioration of the qualifying habitats (listed above) thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features.**

**To ensure for the qualifying habitats that the following are maintained in the long term:**

- Extend of the habitat on site
- Distribution of the habitat within site
- Structure and function of the habitat
- Processes supporting the habitat
- Distribution of typical species of the habitat
- Viability of typical species as components of the habitat
- No significant disturbance of typical species of the habitat

**c) Caithness and Sutherland Peatlands RAMSAR site:**

- Dunlin (*Calidris alpina schinzii*), breeding
- Greylag goose (*Anser anser*), breeding
- Breeding birds assemblages
- Blanket bog

**To avoid deterioration of the qualifying habitats and habitats of the qualifying species (listed above) or significant disturbance to the qualifying species and habitats, thus ensuring that the integrity of the site is maintained. Please see points a & b for specific requirements.**

## 2. DETAILS OF PROPOSAL

**Name:** North Sutherland Land Management Plan

**Applicant: Reference:**

**Description of proposal:** Agreement of a Land Management Plan for the National Forest Estate in North Sutherland, along with a Designated Site Planning Section covering multiple designated sites. This plan sets out what management through the Land Management Plan will be carried out and also specific measures for management of the designated sites. The overall aim of the plan is to set out the long-term aims for the NFE in North Sutherland, agree specific measures that will benefit the designated sites, and also show how Forestry Enterprise Scotland will manage operations to mitigate any potential damage or disturbance.

### Operations:

- Clearfell
- Restocking
- Deer management.
- Specific management operations for qualifying species, including modification of ground vegetation and tree canopy structure in relation to open habitat conservation and marking and monitoring of qualifying features

### Mitigation:

The proposal is over ten breeding seasons therefore there is potential for disturbance to breeding birds. Area of Caithness & Sutherland Peatlands SPA under FES management is relatively small (1261 ha in total, about 0.87% of the total area of the designation), area which might be affected by operations is even smaller. As part of operations, mitigation is included to reduce environmental impacts of proposals on breeding birds. This includes:

FCS Guidance Note<sup>32</sup> –Breeding birds in Scottish Forests will be implemented to ensure that no breeding birds will be disturbed linked to forestry works.

Bird surveys will be undertaken prior to operations taking place; additional surveys will be undertaken when resources allow. Mitigation will be planned to correspond with FC Guidance Note 32.

Otter survey will be carried out prior to felling and/or ground preparation and all the works will be carried out as per FCS Guidance Note 35c – Forest operations and otters in Scotland.

**4. Assessment of impact on European interest.**

**4.1**

***Is the proposal directly connected with or necessary to the management of the site?***

**NO** (if Yes go to 5.)

**4.2**

***Is the proposal likely to have a significant effect on the European interest on the designated site? No*** (if yes assess impact on site)

Only about 0.87% of the SPA, SAC and RAMSAR site's area lies within NFE boundaries and none of the Designated sites area within North Sutherland LMP is due for felling and/or restocking and only relatively small area adjacent to designated sites is due for clearfelling and/or restocking. As the restructuring of the forest generally results in increase of open space available to birds for breeding and foraging, and is likely to improve the hydrology of the designated peatland, the proposal will benefit the qualifying species and habitats.

**Conclusion – Significant effect unlikely.**

**4.3 Summary of assessment in relation to possible impacts**

N/A

**4.4 Any other comments**

Relatively small areas of Borgie and Dalchork forests are within the boundary of the designated sites, and these are either open, or the trees were removed under previously approved FDPs.

**4.5 What would be the outcome on the site if the proposals not approved.**

If these proposals were not approved, there would be restriction on the development of beneficial habitat preservation and restructuring.

**5 Conclusions**

***Will the proposal adversely affect the integrity of the European site:***

By planning to keep disturbance to a minimum using available guidance, surveys by experienced ecologists and expert advice when required, we feel that these proposals will not have a negative impact on the integrity of the SPA, SAC & RAMSAR site.

**6 Conditions required (if any)**

None required, as mitigation built into planning and operational phases.

**Signed**

**Woodland officer/Area Officer:**

**Date :**

**Ops Manager/ Conservator:**

**Date:**

# North Sutherland Land Management Plan 2016 - 2026

**Forestry Commission Scotland**

**Appropriate assessment of forestry proposals which are likely to have a significant effect on a European site.**

(The Conservation of Natural Habitats, &c.) Regulations 1994. Regulation 48.)

**1a. Name of European site affected by the application and current designation status.**

River Borgie - SAC

**1b. Name of Component SSSI if relevant**

River Borgie

**2. Features of European interest, whether priority or non-priority; and conservation objectives for qualifying interests**

**SAC**

- Salmo salar* – Atlantic salmon
- Margaritifera margaritifera* – Freshwater pearl mussel
- Lutra lutra* - Otter

SAC qualifying feature

To avoid deterioration of the habitats of the qualifying species (listed above) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are maintained in the long term:

- ⌚ Population of the species, including range of genetic types for salmon, as a viable component of the site
- ⌚ Distribution of the species within site
- ⌚ Distribution and extent of habitats supporting the species
- ⌚ Structure, function and supporting processes of habitats supporting the species
- ⌚ No significant disturbance of the species
- ⌚ Structure, function and supporting processes of habitats supporting freshwater pearl mussel host species.

## 2. DETAILS OF PROPOSAL

**Name:** North Sutherland Land Management Plan

**Applicant: Reference:**

**Description of proposal:** Agreement of a Land Management Plan for the National Forest Estate in North Sutherland along with a Designated Site Planning Section covering multiple designated sites. This plan sets out what management through the Land Management Plan will be carried out and also specific measures for management of the designated sites. The overall aim of the plan is to set out the long-term aims for the NFE in North Sutherland, agree specific measures that will benefit the designated sites, and also show how Forestry Enterprise Scotland will manage operations to mitigate any potential damage or disturbance.

### **Operations:**

Only small area of SAC lies within the NFE and even smaller might be affected by proposal within the North Sutherland LMP (2016 – 2026). The only activities planned within the Plan period are:

- Felling
- Deer management
- Restocking (adjacent to the SAC)

Forest operations within the catchment of the River Borgie SAC will comply fully with Forests & Water Guidelines and Operations in FWPM Catchment Guidance. This mitigation is built into planning and work practices for ongoing forest work..

All civil engineering projects and temporary water crossings will meet SEPA best practice standards (e.g. CAR General Binding Rules & PPG) so that diffuse pollution is controlled. Water crossings will not represent a barrier to salmonids and will comply with SEPA upland river crossing standards.

Riparian native woodland will be created and/or maintained along tributaries flowing into the SAC to benefit salmonids, freshwater pearl mussels and water quality. The new riparian zone will act as a natural buffer to protect the water course from neighbouring operations.

FES will also contribute as required to wildlife crime initiatives to reduce the threat of poaching. Finally all survey works will be undertaken using licensed and experienced ecologists.

**4. Assessment of impact on European interest.**

**4.1**

***Is the proposal directly connected with or necessary to the management of the site?***

**NO** (if Yes go to 5.)

**4.2**

***Is the proposal likely to have a significant effect on the European interest on the designated site? Yes***

Felling of conifer crop planted close to the river bank will remove the non-native trees and their possible negative impact on the water quality.

Benefits of creating riparian woodland development in forest tributaries will assist water quality within the SAC.

**Conclusion – significant positive effect is likely**

**4.3 Summary of assessment in relation to possible impacts**

N/A

**4.4 Any other comments**

None.

**4.5 What would be the outcome on the site if the proposals not approved.**

If these proposals were not approved, there would be significant and damaging restriction on the development of beneficial riparian woodland. In addition, restructuring of the forest with greater diversity of species and greater area of native woodland would not be achieved.

**5 Conclusions**

***Will the proposal adversely affect the integrity of the European site:***

By planning to keep disturbance to a minimum using available guidance, surveys by experienced ecologists and expert advice when required, we feel that these proposals will not have a negative impact on the integrity of the River Borgie SAC.

**6 Conditions required (if any)**

None required, as mitigation built into planning and operational phases.

**Signed**

**Woodland officer/Area Officer:**

**Date :**

**Ops Manager/ Conservator:**

**Date:**

**Forestry Commission Scotland**

**Appropriate assessment of forestry proposals which are likely to have a significant effect on a European site.**

(The Conservation of Natural Habitats, &c.) Regulations 1994. Regulation 48.)

**1a. Name of European site affected by the application and current designation status.**

River Naver - SAC

**1b. Name of Component SSSI if relevant**

N/A

**2. Features of European interest, whether priority or non-priority; and conservation objectives for qualifying interests**

**SAC**

- Salmo salar* – Atlantic salmon
- Margaritifera margaritifera* – Freshwater pearl mussel

SAC qualifying feature

To avoid deterioration of the habitats of the qualifying species (listed above) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are maintained in the long term:

- ⌚ Population of the species, including range of genetic types for salmon, as a viable component of the site
- ⌚ Distribution of the species within site
- ⌚ Distribution and viability of freshwater pearl mussel host species
- ⌚ Distribution and extent of habitats supporting the species
- ⌚ Structure, function and supporting processes of habitats supporting the species
- ⌚ No significant disturbance of the species
- ⌚ Structure, function and supporting processes of habitats supporting freshwater pearl mussel host species.

## 2. DETAILS OF PROPOSAL

**Name:** North Sutherland Land Management Plan

**Applicant: Reference:**

**Description of proposal:** Agreement of a Land Management Plan for the National Forest Estate in North Sutherland along with a Designated Site Planning Section covering multiple designated sites. This plan sets out what management through the Land Management Plan will be carried out and also specific measures for management of the designated sites. The overall aim of the plan is to set out the long-term aims for the NFE in North Sutherland, agree specific measures that will benefit the designated sites, and also show how Forestry Enterprise Scotland will manage operations to mitigate any potential damage or disturbance.

### **Operations:**

Only small area of SAC lies within the NFE and even smaller might be affected by proposal within the North Sutherland LMP (2016 – 2026). The only activities planned within the Plan period are:

- Deer management (adjacent to SAC)
- Felling (adjacent to SAC)
- Restocking (adjacent to the SAC)

Forest operations within the catchment of the River Naver SAC will comply fully with Forests & Water Guidelines and Operations in FWPM Catchment Guidance. This mitigation is built into planning and work practices for ongoing forest work..

All civil engineering projects and temporary water crossings will meet SEPA best practice standards (e.g. CAR General Binding Rules & PPG) so that diffuse pollution is controlled. Water crossings will not represent a barrier to salmonids and will comply with SEPA upland river crossing standards.

Riparian native woodland will be created and/or maintained along tributaries flowing into the SAC to benefit salmonids, freshwater pearl mussels and water quality. The new riparian zone will act as a natural buffer to protect the water course from neighbouring operations.

FES will also contribute as required to wildlife crime initiatives to reduce the threat of poaching. Finally all survey works will be undertaken using licensed and experienced ecologists.

**4. Assessment of impact on European interest.**

**4.1**

***Is the proposal directly connected with or necessary to the management of the site?***

**NO** (if Yes go to 5.)

**4.2**

***Is the proposal likely to have a significant effect on the European interest on the designated site? Yes***

Benefits of creating riparian woodland development in forest tributaries will assist water quality within the SAC.

**Conclusion – significant positive effect is likely**

**4.3 Summary of assessment in relation to possible impacts**

N/A

**4.4 Any other comments**

None.

**4.5 What would be the outcome on the site if the proposals not approved.**

If these proposals were not approved, there would be significant and damaging restriction on the development of beneficial riparian woodland. In addition, restructuring of the forest with greater diversity of species and greater area of native woodland would not be achieved.

**5 Conclusions**

***Will the proposal adversely affect the integrity of the European site:***

By planning to keep disturbance to a minimum using available guidance, surveys by experienced ecologists and expert advice when required, we feel that these proposals will not have a negative impact on the integrity of the River Naver SAC.

**6 Conditions required (if any)**

None required, as mitigation built into planning and operational phases.

**Signed**

**Woodland officer/Area Officer:**

**Date :**

**Ops Manager/ Conservator:**

**Date:**