Forestry and Land Scotland | Coilltearachd agus Fearann Alba

West Region

Taynuilt

Land Management Plan

Approval date: ***

Plan Reference No: ****

Plan Approval Date: *****

Plan Expiry Date: ******

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

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

FSC www.fsc.org FSC® C123223 The mark of responsible forestry

PEFC PEFC/16-40-1002 Promoting Sustainable Forest Management www.pefc.org

FORESTRY AND LAND SCOTLAND
Application for Land Management Plan Approvals in Scotland
Forestry and Land Scotland - Property

Region:	West
Woodland or property name:	Taynuilt (Comprising Fearnoch, Glen Nant & Inverawe)
Nearest town, village or	Taynuilt
OS Grid reference:	Fearnoch (NM 965 305); Glen Nant (NN 006 287); Inverawe (NN 034 319).
Local Authority district/unitary	Argyll & Bute Council

Areas for Approval	*Conifer Ha*	*Broadleaf*	*Open Space*	*Other Land*	*Peatland Restoration*
Clear felling	*366.30*				
Restocking	*173.08*	*48.46*	*19.06*		
Selective Fell	*8.49*				
Natural Regeneration		*126.70*			

Thinning Approval:
Silvicultural Thinning: 350.53ha
Site Management Thinning: 769.11Ha

Note:
The restock/regen areas shown only relate to felling and restocking within the first ten years of the LMP. Legacy restocking of previously felled areas will also take place during this period and these areas are detailed in summary tables within the LMP. Natural Regeneration will be the preferred option for PAWS restoration. The progress of regeneration will be monitored at year 5 and 2 yearly intervals thereafter if required and planting may be necessary to achieve desired species and stocking densities. Areas of productive broadleaves are proposed for some PAWS areas in Fearnoch and these would be established by planting appropriate species of local provenance as well as natural regeneration. The areas shown for planted BL are indicative at this stage & final areas selected for productive broadleaves (planting) will be identified post felling.

1. I apply for **Land Management Plan** approval for the property described above and in the enclosed Forest Plan.
2. * I apply for an opinion under the terms of the **Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 for road building** as detailed in my application.
3. I confirm that the initial scoping of the plan was carried out with FC staff in 2018/2019.

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 agreement has been reached with all of the stakeholders over the content of the forest plan and that there are no outstanding issues to be addressed. Copies of consultee endorsements of the plan are attached.
7. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed …… PP Regional Manager

Signed…… Conservator

Region: West

Conservancy: Perth & Argyll

Date:

Date of Approval: …….

Date approval ends: …….

Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Environmental Impact Assessment
Screening Opinion Request Form

Please complete this form to find out if you need consent from Forestry Commission Scotland, under the **Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017**, to carry out your proposed forestry project. Please refer to Schedule 2 Selection Criteria for Screening Forestry Projects under Applying for an opinion. If you are not sure about what information to include on this form please contact your local Conservancy office.

Proposed Work							
Please put a cross in the box to indicate the type of work you are proposing to carry out. Give the area in hectares and where appropriate the percentage of conifers and broadleaves							
Proposed Work	select	Area in hectares	% Conifer	% Broad-leaves	Proposed work	select	Area in hectares
Afforestation	☐				Forest roads	☒	2.10
Deforestation	☐				Forest quarry	☐	
Location of work							

Description of Forestry Project and Location
Provide details of the forestry project (size, design, use of natural resources such as soil, and the cumulative effect if relevant). Please attach map(s) showing the boundary of the proposed work and other known details.
See Taynuilt LMP Map M24 (Roads & Infrastructure). The LMP area is generally well roaded but two road spurs are required in Fearnoch to access proposed Phase 1 Coupes. (568 linear m @ NM 922 292 & 142 linear m @ NM 972 302). In Inverawe (NN 037 318) a road extension of 1343m is required to fell mature Phase 1 & 2 timber. The first 425m of this section already has an approved PN (dated 04/10/2018). A further 918m are proposed to access Phase 2 fellings. For completeness this EIA Screening request includes the full road lengths including the 425m with an approved PN. Existing Quarries will be used for road material in addition to as dug material located along the roadline. All road construction will be UK Forest Standard Compliant and will follow the UK Forests & Water Guidelines which will mitigate impacts on GWDTEs. The SEPA CAR regulations will be followed prior to operational activity. The design of the road will conform to both the Timber Transport Forum document "The design and use of the structural pavement of unsealed roads 2014" and the SNH guidance "Constructed tracks in the Scottish Uplands Sept 2015 revision". Prior notification via Argyll & Bute Council will be required post LMP approval and at a time relevant to the felling phase.

1

Forestry Commission Scotland
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Environmental Impact Assessment
Screening Opinion Request Form

Provide details on the existing land use and the environmental sensitivity of the area that is likely to be affected by the forestry project.
The proposed roadlines within Fearnoch forest are in localities with limited landscape, recreational and ecological impacts. Within Inverawe there are no Statutory Designations but the Glen Etive & Glen Fyne (Golden Eagle) SPA lies to the east of the forest margin. Inverawe also lies within the North Argyll APQ (a non statutory designation) and is prominent in the landscape. All roadlines will be located within managed forest areas with conifer crop cover.

Description of Likely Significant Effects
Provide details on any likely significant effects that the project will have on the environment (resulting from the project itself or the use of natural resources) and the extent of the information available to assist you with this assessment.
The proposed roadlines within Fearnoch forest are in localities with limited landscape, recreational and ecological impacts. Sensitivities are therefore low and restocking post felling will screen the roadline. Within Inverawe there are no Statutory Designations but the Glen Etive & Glen Fyne (Golden Eagle) SPA lies to the east of the forest margin. It is not anticipated that the proposed roadline will have any significant impacts on the adjacent SPA. Inverawe also lies within the North Argyll APQ (a non statutory designation) and is prominent in the landscape. The existing roadline has brought the road to an elevated location and the proposed roadline contours along the slope on a line that is sympathetic to landform. The section of road for the Phase 2 felling (beyond the PN approved section) is also screened by the terrain which forms a shelf at this point that greatly reduces visibility. Felling and restocking proposals have also been designed to screen and mitigate the roadline. The landscape impacts of the new road section in Inverawe are therefore considered to be not significant due to the choice of roadline and forest design.

Include details of any consultees or stakeholders that you have contacted in order to make this assessment. Please include any relevant correspondence you have received from them.
Internal consultation was carried out post the production of the draft felling plan to consider the impacts of the proposed road extensions. Wider external consultation was carried out as detailed in Appendix III

Mitigation of Likely Significant Effects
If you believe there are likely significant effects that the project will have on the environment, provide information on the opportunities you have taken to mitigate these effects.
No significant impacts have been identified that require mitigation. Landscape impacts have been mitigated during the LMP design process in relation to coupe design and restocking proposals.

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Environmental Impact Assessment
Screening Opinion Request Form

Sensitive Areas	
Please indicate if any of the proposed forestry project is within a sensitive area. Choose the sensitive area from the drop down below and give the area of the proposal within it.	
Sensitive Area	Area
Select...	
Select...	
Select...	
Select...	
Select...	

Property Details			
Property Name:	Taynuilt Forest		
Business Reference Number:	N/A	Main Location Code:	N/A
Grid Reference: (e.g. NH 234 567)	NM 922 292, NM 972 302 & NN 037 318	Nearest town or locality:	Taynuilt
Local Authority:		ARGYLL & BUTE	

Owner's Details			
Title:	MR	Forename:	ROGER
Surname:	WILSON		
Organisation:	FLS	Position:	PLANNING FORESTER
Primary Contact Number:	01313705505	Alternative Contact Number:	07776171413
Email:	roger.wilson@forestryandland.gov.scot		
Address:	WHITEGATES, LOCHGILPHEAD, ARGYLL		
Postcode:	PA31 8RS	Country:	UK
Is this the correspondence address?	Yes		

Agent's Details			
Title:		Forename:	
Surname:			
Organisation:		Position:	

Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Environmental Impact Assessment
Screening Opinion Request Form

Primary Contact Number:		Alternative Contact Number:	
Email:			
Address:			
Postcode:		Country:	
Is this the correspondence address?		Select...	

Office Use Only	
GLS Ref number:	

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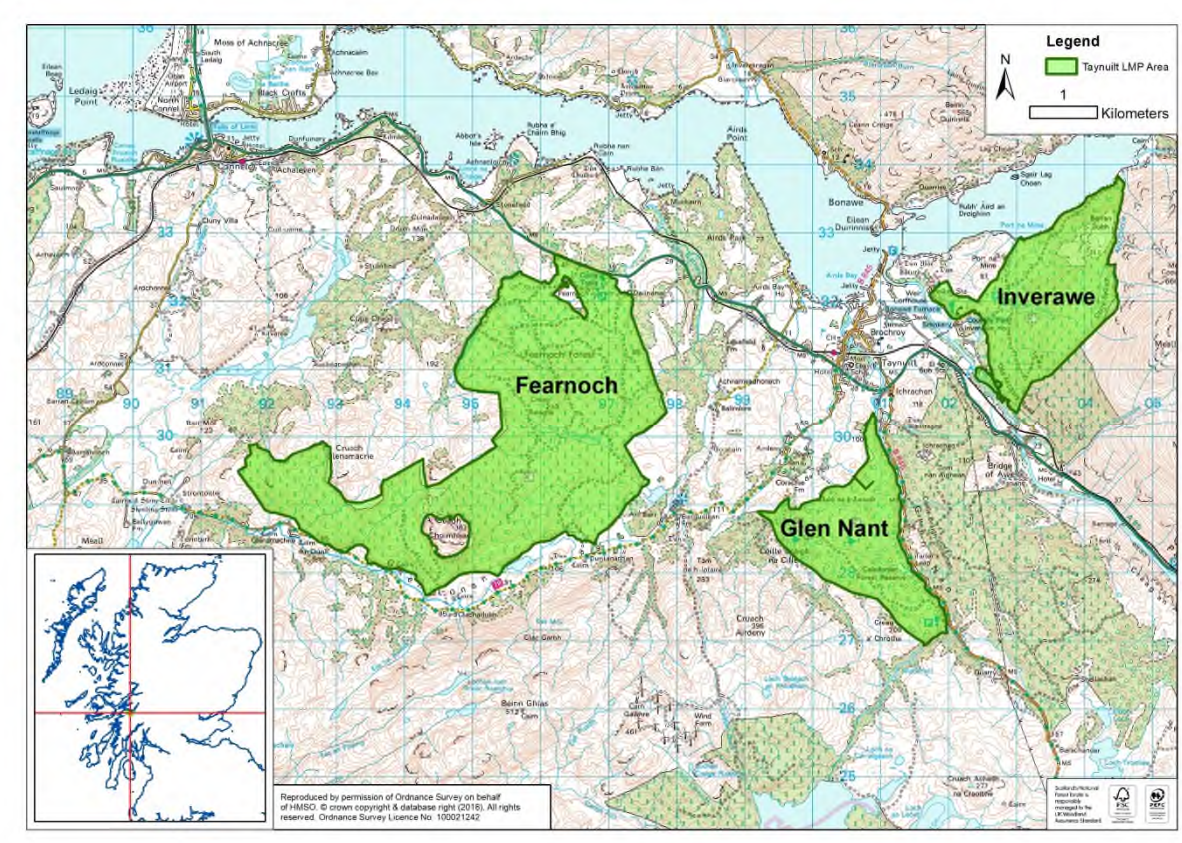
1: Summary

The Taynuilt Land Management Plan (LMP) area covers 2041 Ha, and comprises 3 discrete blocks: Fearnoch(1289Ha), Glen Nant (332Ha) & Inverawe (420Ha). See Map below for location.

While lying in close proximity to each other the three blocks have very distinctive features and are considered as three distinct zones for planning purposes within the plan.



Land Management Plan(LMP) Location

Fearnoch is a well roaded, mixed aged, mixed species forest containing a wide range of soil types. Restructuring has taken place across the full extent of the forest. The terrain is gently rolling which benefits harvesting operations and reduces landscape impacts. The forest is a very popular recreational area. Clais Dhearg SSSI lies to the West of the forest & Airds Park & Coille Nathais SSSI lies to the East. Both SSSIs also fall within the wider Loch Etive Woods SAC. There are

extensive PAWS areas in Fearnoch which often occupy highly productive sites carrying mixed conifers. Part of the forest falls within the catchment of the Oban water supply.

Glen Nant is a National Nature Reserve managed in partnership with SNH. It is also a Caledonian Forest Reserve and an SSSI. The woodland comprises a matrix of mature native woodland and clear felled conifer areas that are being restored to native woodland by natural regeneration. Glen Nant has a very high ecological value as Atlantic Oakwood habitat and enhances the aesthetics of the roadside landscape when viewed from the B845 which runs along the edge of the woodland. Wider landscape impacts are limited and recreational use is modest. Much of the site is classed as a Natural Reserve.

Inverawe has a very high visual impact from a range of villages and tourist routes. The forest comprises a mix of productive conifers and native broadleaves. The Barran Dubh SSSI lies within the NE side of the woodland. Restoration of the SSSI area to native woodland is largely complete. There are significant areas of quality mature hardwoods and policy type mixed conifer plantings along the northern edge of the forest. Access to these mature broadleaves is constrained. A small area of mature mixed species woodland between the public road and the River Awe is the subject of a potential Community acquisition.

The forest was established with timber production as a priority and timber production remains an important objective today, however extensive felling and replanting has created a more diverse forest structure with a wider range of species, and this helps to deliver multi-purpose benefits. The forest is FSC certified and the management will seek at all times to meet the UK Woodland Assurance Standard.

This LMP builds on the diverse structure created by previous forest plans. The core issue for each woodland block can be summarised as:

Fearnoch: PAWS restoration and enhancing adjacent designated sites.

Glen Nant: Maintenance and monitoring of PAWS restoration areas.

Inverawe: Landscape and enhancing the SSSI.

The plan presents felling and replanting proposals for the first ten years (2020 to 2029) in detail. Forest road and track formation during this period are also detailed. The first ten years are important because this relates to the parts of the plan that seeks approval for specific forestry operations. These are set out in Section 2 of this plan.

The following ten years (post 2029) and beyond are also considered in the plan to indicate a direction of travel and to provide context. These long term plan proposals are set out in the maps associated for each individual zone (see below).

Because the plan area is large and there are areas with very different characteristics, the plan area has been divided into three management zones, identified because of their common characteristics, issues and challenges, and the plan is presented on this basis.

Objectives

Plan objectives for have been identified, and these are related to each zone in Section 5.

The plan objectives are:

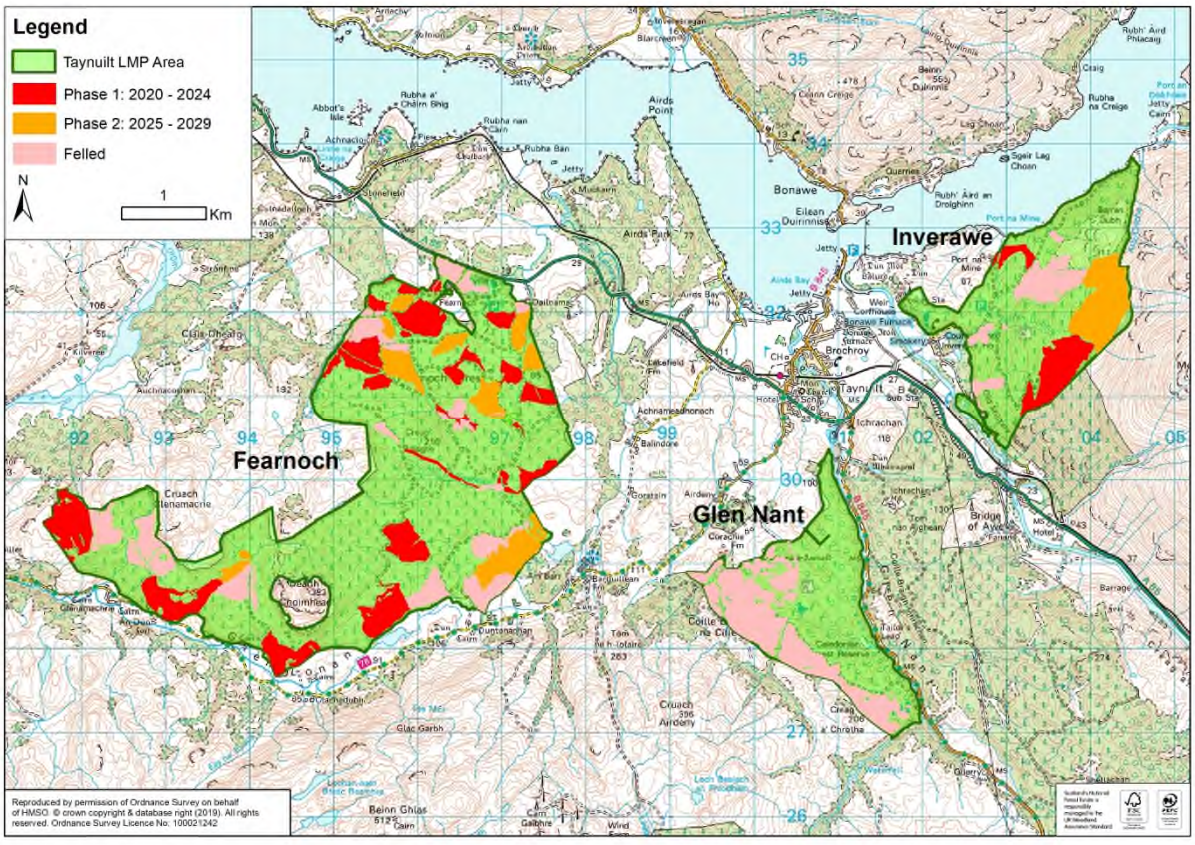
- Protect and enhance designated conservation sites within & adjacent to the LMP area.
- Restore PAWS areas to create wider landscape scale native woodland linkages.
- Timber production from a wide range of conifer species with the emphasis on matching species with site.
- Evaluate the PAWS restoration areas for productive broadleaves.
- Enhance the landscape by coupe design and restocking proposals.
- Maintain and enhance the recreational infrastructure.
- Maintain & enhance water quality in relation to both private and public water supplies and the Loch Etive shellfish growing area.
- Reduce the occurrence risk and potential impacts of *Phytophthora ramorum* by felling Larch areas at the earliest feasible opportunity.

Summary of management proposals

The felling proposals in the first twenty years of the plan can be summarised as follows:

Felling	Area Ha	% LMP Area
Phase 1: 2020 - 2024	**230**	**11%**
Phase 2: 2025 - 2029	**136**	**7%**
Phase 3: 2030 - 2034	149	7%
Phase 4: 2035 - 2039	160	8%
CCF	9	0%
Total	684	33%

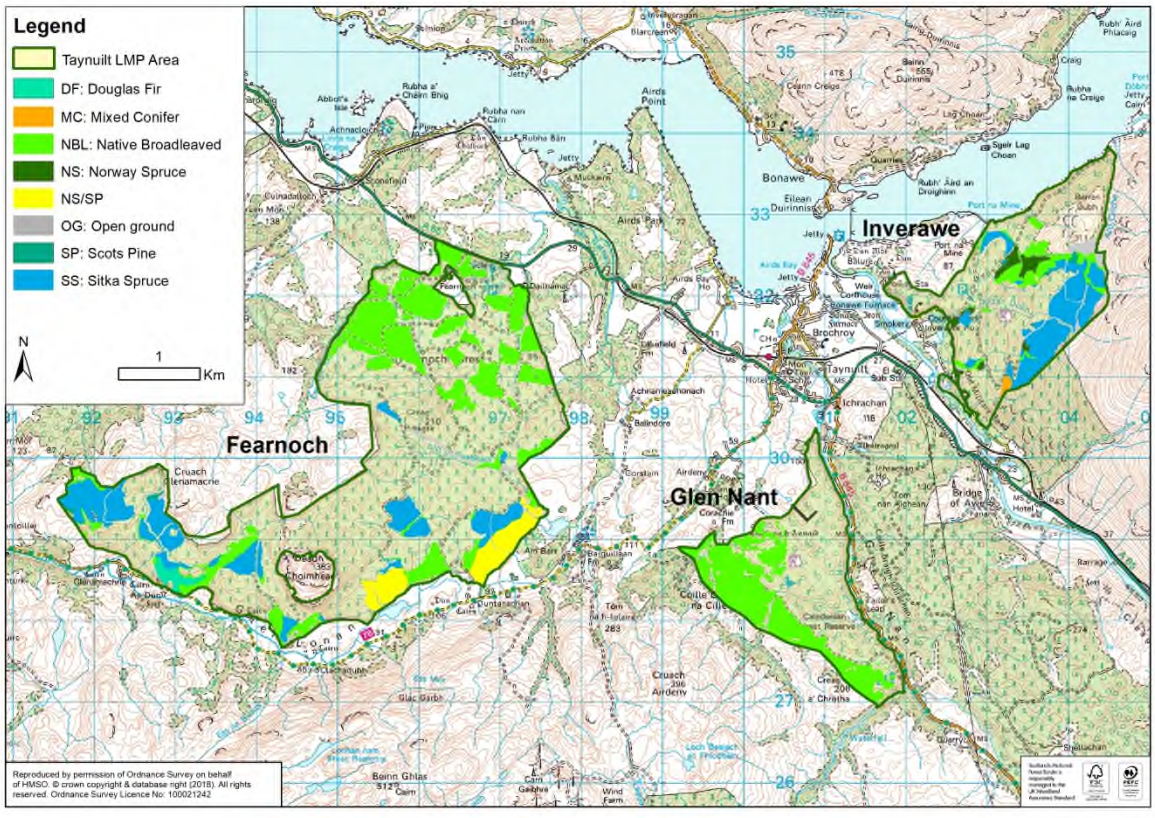
See Maps associated with each Zone (Feranoch/Glen Nant/Inverawe) in the main map section for felling proposals across the next 20 years and beyond. The first two felling phases are shown below as these would be the approved felling areas for this plan, with subsequent felling approvals being the subject of a plan review at year 10.



Felling Phases 2020 to 2029 (includes 281Ha Felled Ground)

The species composition over the first twenty years changes over time as follows:

Species Group	**Species Group @ 2020 Area Ha**	**Species Group @ 2020 %**	**Species Group @ 2029 Area Ha**	**Species Group @ 2029 %**	Species Group @ 2039 Area Ha	Species Group @ 2039 %	% Change 2020 to 2039
Felled	**281.33**	**15%**					
Mixed Broadleaves	**76.35**	**4%**	**82.67**	**4%**	85.22	4%	0%
Diverse Conifers	**184.99**	**9%**	**196.75**	**10%**	161.33	8%	-1%
Native Broadleaves	**294.75**	**14%**	**675.88**	**33%**	854.60	42%	28%
Open Ground	**275.51**	**12%**	**274.48**	**13%**	249.37	12%	0%
Sitka Spruce	**928.17**	**45%**	**811.32**	**40%**	690.59	34%	-11%
Total	**2041.10**	**100%**	**2041.10**	**100%**	2041.10	100%	



Restocking 2020 to 2029 (includes Phase 1 & 2 fellings, previously felled land, PAWS restoration areas by Natural Regen, and some integral open ground)

The biggest change in species composition relates to the proposed reduction of Sitka Spruce and the increase in broadleaves as part of the PAWS restoration. Note that the felled area relates to significant PAWS restoration already underway in Glen Nant, Inverawe and Fearnoch.

New roading (see map M24) includes 1343m of new road in Inverawe to access the standing timber on the upper part of the site (a Prior Notification has been submitted & approved for the first section 425m of road). Two new road extensions of 695m in total are proposed to reach areas of Phase 1 timber in Fearnoch that are currently landlocked, and these extensions will require a Prior Notification. An EIA screening request will be submitted as part of the LMP for the proposed new roads which total 2.10Ha (2053m x 10m).

Overall, the operations planned for the forest during the period 2020 – 2029 include the following activities:

Planned operations	***2020 – 2029 plan period***
Felling	*366Ha*
Silvicultural Thinning	*351Ha*
Site Management Thinning	*769Ha*
Restock/Regeneration of Phase 1 & 2 Fellings	*348Ha*
Restock/Regeneration of Previously felled areas and current open ground	*278Ha felled areas* *22Ha open ground*
New woodland creation	*0Ha*
Road Construction	*2053 linear m (2.10Ha)*
ATV Track Construction	*To be identified post felling*
Quarry	*Existing*

Note: Road Construction & ATV Track Construction outwith the existing road/track footprint require Prior Notification(PN). A section of proposed new road (425m) in Inverawe has a PN approval in place dated 04/10/2018. An EIA screening request will be submitted for the proposed new roads as part of the LMP process.

Consultation & further Information

During the development of this plan we have consulted with the local community and other stakeholders. For further information on the plan please contact:

Donald McNeill
Planning Manager

Forestry & Land Scotland
West Region
Millpark Road
Oban
PA34 4NH
or
Whitegates
Lochgilphead
PA31 8RS

Tel: (Lochgilphead office) 0131 370 5200
Tel: (Fort William office) 0131 370 5700
email: enquiries.west@forestryandland.gov.scot
donald.mcneill@forestryandland.gov.scot

Note: LMP presentation.

The Taynuilt LMP has been set out as follows:

Sections 1 to 5 cover the whole plan area.

Section 6 introduces the three management zones in the plan.

Sections 7, 8 & 9 then considers each of the management zones in detail.

Sections 10, 11, 12 relate to the full plan area.

The Appendices relate to the full plan area.

2.0: Legal and Regulatory Requirements

The Taynuilt Land Management Plan (LMP) area covers 2041 Ha as shown on Map *M1 Location & Viewpoints*

2.1 Summary of planned operations

Details of individual Phase 1 & 2 coupes in terms of felling/restocking & thinning are included in appendix VII. The operations planned for the Taynuilt LMP during the period 2020 – 2029 include the following activities:

Planned operations	***2020 – 2029 plan period***	***% of woodland area***
Felling	366Ha	18
Silvicultural Thinning	351Ha	17
Site Management Thinning	769Ha	38
Restock/Regeneration of Phase 1 & 2 Fellings	348Ha	17
Restock/Regeneration of Previously felled areas & current open ground	278Ha felled areas 22Ha open ground	14 1
New woodland creation		
Road Construction	2053 linear m (2.10Ha)	0
ATV Track Construction		
Quarry		

Note:

For roading See Map M24. Prior Notifications (PN) will be submitted for new road sections serving Phase 1 fellings post plan approval and for Phase 2 fellings towards the end of the

Phase 1 period. All proposed roads will require PNs with the exception of 425m in Inverawe which has an approved PN in place (04/10/2018).

The total road length of 2053m by a 10m width equates to 2.10Ha . The road lines are outwith any sensitive areas. An EIA determination will be submitted to FLS in relation to the new roading as part of the LMP process.

2.2 Proposed Felling in years 2020-2029

Appendix VII shows details of individual felling coupes within phase 1 & Phase 2. As shown in map *M2 Felling within first ten years of Plan*, it is proposed that 11% of the forest area will be felled between 2020 and 2024, and 7% of the forest area will be felled between 2024 and 2029. The breakdown of predicted yield is indicated below.

Operation	Area Ha	Indicative Yield T	% of Forest Area
Clearfell Phase 1 (2020 - 2024):	230	82000	11%
Clearfell Phase 2 (2025 - 2029):	136	48000	7%
Silvicultural Thinning 2020 - 2029	351	13000	17%
Site Management Thinning 2020 - 2029	769	0	38%

Table showing felling areas & indicative yields from first ten years of plan

2.3 Proposed thinning in years 2020-2029

Map *M3 Thinning within first ten years of Plan* illustrates the potential for thinning in the first ten years of the plan. There is potential to silviculturally thin 17% of the forest area during the ten years between 2020 and 2029. The majority of this area falls within Fearnoch where the categorisation is proposed to facilitate future management options linked to PAWS restoration. For instance general shelterwood thinning may be counterproductive in terms of PAWS restoration as it may encourage conifer regen, however thinning out of invasive conifers to leave less competitive species may be beneficial in reduced the seed load of undesirable species. The actual area thinned on this basis will depend on regen monitoring, but it

is likely to be significantly less than the full 351Ha shown. Additional non silvicultural thinning areas are shown in map M3, and these cover areas where tree cover is being managed along roadlines, fencelines, on open ground priority habitat or as part of broadleaved woodland management. These areas comprise 38% of the forest area but will yield a minimal output. The maximum volume of felling in exceptional circumstances covered by this approval is **40** Cubic metres per Land Management Plan per calendar year.

2.4 Proposed restocking in years 2020-2029

Appendix VII shows details of restocking for individual felling coupes within phase 1 & Phase 2.

Map *M4 Restocking in First 10 years of Plan* illustrates the restocking proposals in the first ten years of the plan. Species and areas proposed for restocking in this first ten years are as follows:

Table showing proposed restocking area breakdown from first ten years of plan

Proposed Restocking	Phase 1 & 2 Area Ha	% of restock Area	Already Felled Area Ha	% of restock Area	Existing OG restocked in first ten years Area Ha	% of restock Area	Total Restock	% of Total Restock
Mixed Conifer	50	14%	24.72	9%	1.13	5%	75.85	11%
Native Broadleaves	174.16	48%	193.97	69%	19.51	88%	387.64	58%
Open Ground	19.06	5%	3.26	1%			22.32	3%
Sitka Spruce	123.08	34%	59.05	21%	1.6	7%	183.73	27%
Total	366.3	100%	281	100%	22.24	100%	669.54	100%

Note: High levels of NBL restocking within the previously felled areas are strongly influenced by the restoration of the PAWS areas in Glen Nant which is an SSSI & NNR. Natural regeneration within these areas is already well advanced.

This restocking will change the forest species composition as follows:

Species Group	Species Group @ 2020 Area Ha	Species Group @ 2020 %	Species Group @ 2029 Area Ha	Species Group @ 2029 %	% Change 2020 to 2029
Felled	281.33	15%			
Mixed Broadleaves	76.35	4%	82.67	4%	0%
Diverse Conifers	184.99	9%	196.75	10%	1%
Native Broadleaves	294.75	14%	675.88	33%	19%
Open Ground	275.51	12%	274.48	13%	1%
Sitka Spruce	928.17	45%	811.32	40%	-5%
Total	2041.10	100%	2041.10	100%	

Table showing proposed change in Forest Composition from 2020 to 2029

The biggest change in species composition relates to the proposed reduction of Sitka Spruce and the increase in broadleaves as part of the PAWS restoration. Most of the area shown as felled (15%) was former Sitka Spruce, and a large proportion is being converted to Native Broadleaves. The “felled” area therefore relates to significant PAWS restoration already underway in Glen Nant, Inverawe and Fearnoch.

2.5 Access and roading 2020-2029

Proposed new roads & the current road layout can be found in Map *M24: Roads & Infrastructure.*

The forest areas are generally well roaded, and in Fearnoch a short 142m spur is proposed to access a Phase 1 Felling and a longer road extension of 568m is required to access a Phase 1felling containing significant areas of mature Larch. In Inverawe a Prior Notification has been submitted/approved for a road extension of 425m to harvest mature timber along the upper slopes. It is proposed to extend this section by 918m which will require a Prior Notification. An EIA determination will be submitted as part of the LMP for all of the proposed new roads required within the first ten years of the plan.

Ranger ATV tracks may be required over restocked areas to facilitate deer control and restocking management and operations. The need for these tracks and the

required route can only realistically be assessed post felling, at which point Prior Notifications will be submitted prior to operations commencing.

2.6 Other Projects

A number of other activities not requiring approval will be undertaken within the plan area during the plan period. The table below lists the majority, but is not exhaustive.

Regional Team	Activity	Area/Location	Indicative Date
Environment	Natural Regeneration Monitoring	Restocking Coupes	2020 - 2029
	Species Monitoring & Surveying	All operational coupes	2020 - 2029
	Rhododendron/INNS control.	All	2020 - 2029
Recreation & Tourism	Maintenance of existing facilities and trails; management of public access to operational sites.	All recreational sites.	2020 - 2029
Deer Management	Deer Culling as per the DMP to meet target densities to permit successful establishment of vulnerable crops.	Whole Plan area	2020 - 2029
Civil Engineering	Prior Notification for new roads as required.	See Map M24	As required
	Roads maintenance	All forest roads	As required.
Planning	Plant health monitoring – DNB Surveys, *P.ramorum*	Pine and larch Sub-cpts	Annually
	Crop surveys – Monitoring of natural regeneration and stocking density; production and attribute surveys of timber crops; SDA's, plant health inspections.	Restock coupes at year 1 & 5	As required

2.7 Departure from UKFS Guidelines

The LMP seeks to follow the UKFS in all aspects.

2.8 Tolerance table

	Map Required (Y/N)	Adjustment to felling period*	Adjustment to felling coupe boundaries**	Timing of Restocking	Changes to Restocking species	Changes to road lines	Designed open ground ***	Windblow Clearance* ***
FC Approval normally not required	N	Fell date can be moved within 5 year period where separation or other constraints are met	Up to 10% of coupe area	Up to 2 planting seasons after felling	Change within species group e.g. evergreen conifers or broadleaves		Increase by up to 5% of coupe area	
Approval by exchange of email and map	Y		Up to 15% of coupe area	Between 2 and 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised		Additional felling of trees not agreed in plan Departures of more than 60m in either direction from centre line of road	Increase by up to 10% Any reduction in open ground within coupe area	Up to 5 ha
Approval by formal plan amendment may be required	Y	Felling delayed into second or later 5 year period Advance felling into current or 2nd 5 year period	More than 15% of coupe area	More than 5 planting seasons after felling subject to the wider forest and habitat structure not being significantly compromised	Change from specified native species Change between species group	As above, depending on sensitivity	More than 10% of coupe area Colonisation of open areas agreed as critical	More than 5 ha

Note

*Felling sequence must not compromise UKFS in particular felling coupe adjacency. Felling progress and impact will be reviewed against UKFS at 5 year review.

** No more than 1 ha, without consultation with FCS, where the location is defined as 'sensitive' within the Environmental Impact Assessment (Forestry) 1999 Regulations (EIA).

*** Tolerance subject to an overriding maximum of 20% designed open ground.

****Where windblow occurs, FCS must be informed of extent prior to clearance and consulted on clearance of any standing trees.

3.0 EIA Screening Determination

3.1 Proposed removal of woodland

None

3.2 Proposed new roads and proposed upgrading of roads

A total of 2053 linear m which equates to 2.10Ha of new roading is required to access the proposed Phase 1 & Phase 2 coupes. The sites are outwith sensitive designated areas. An EIA screening request is submitted as part of the LMP process (P4 to P7 above).

3.3 Proposed quarries

EIA determination already assessed, no EIA required.

3.4 Proposed woodland creation

Opportunities for woodland creation are limited. It is proposed to adjust the area of some integral open ground for landscape and other reasons, and this will involve both the creation of new open ground and woodland expansion on some other areas of existing open ground. Much of this expansion relates to PAWS restoration via natural regeneration.

4: Introduction

4.1 The existing land holding

The Taynuilt Land Management Plan (LMP) area covers 2041 Ha, and comprises 3 discrete blocks: Fearnoch(420Ha), Glen Nant (332Ha)& Inverawe(420Ha). (See Map *M1: Location & Viewpoints*).

The area has been extensively restructured with productive conifer areas being replaced by Native Woodland. Natural regeneration is the primary mechanism for regeneration of Native Woodland, although some fenced enclosures have been successfully planted with a range of broadleaves.

Many of the PAWS occupy very productive areas that have grown very high volumes of quality conifer timber, as a result the conversion to PAWS comes at a high opportunity cost in terms of carbon sequestration and economic output. However the proximity of existing mature Atlantic Oakwood within designated sites, and the role the restored PAWS areas can play in establishing landscape scale linkages, offers an opportunity for landscape scale native woodland restoration that is seldom available.

The site is generally very productive with the potential for a wide range of conifer species, but the upper slopes of Inverawe and the south west margins of Fearnoch are generally only suitable for Sitka Spruce.

Much of the site is potentially suitable for productive broadleaves and much of the remnant oak in site and within existing designated areas is a remnant of intensively managed oak woodland.

Inverawe has a very high landscape impact from the road network, villages and local tourist sites, the other areas have roadside impacts but the wider landscape impacts are much lower.

All the areas contribute to the provision of recreation, but Fearnoch is particularly well used by visitors and locals, with many local users appreciating the working nature of the forest as an element that adds interest. There is an extensive network of circular routes and well surfaced paths. Consultation during the plan process highlighted regular users sense of ownership of the site and a high level of interest in how it was managed.

Good car parking with a range of waymarked routes set in a diverse and managed forest were considered key features by users.

These and other key features have contributed to the analysis of future management options. These are mapped Map *M5: Landscape Scale Opportunities & Constraints*.

More detail on the existing physical characteristics and background to the site which has informed this LMP can be found in Appendix II.

The information required to inform the regulation of forestry activities over the next ten years, including the EIA screening determination, is set out in detail in Sections 2 and 3 above.

Management for the following ten years (post 2029) and beyond are also considered in the plan to indicate a direction of travel and to provide context. These long term plan proposals are set out in the maps associated for each individual zone, and then as a whole in Sections 10,11& 12.

4.2 Setting and context

The LMP area lies on the south shore of Loch Etive with the village of Loch Etive at its centre. The A85 and the Oban to Crianlarich railway pass between the forest blocks.

While the three forest blocks of Fearnoch, Glen Nant & Inverawe are located in close proximity, they display very different characteristics which impacts directly on forest management.

Fearnoch occupies rolling low hills along the north side of Glen Lonan, Glen Nant occupies the enclosed west side of Glen Nant while Inverawe is located on the lower western slope of the Ben Cruachan range.

The locality features a number of significant ecological designations which cross the LMP march in places. Most of these ecological designations are linked to the Atlantic Oakwood ecosystem, and the landscape scale of these native woodlands adds to their significance.

The diverse woodland is ecologically rich with red squirrel and wood ant being present in high numbers within the diverse conifer areas.

A number of archaeological features linked to past woodland management are present, but most of the archaeology is linked to agricultural activity and dates from the last three hundred years.

Inverawe:
Mixed Conifer restocking in foreground with mature mixed hardwoods in background.

5: Whole Plan Objectives

Following the review of the previous plan (See Appendix I), an analysis of the scoping responses (see Appendix III), and the challenges identified in each management zone, the following management objectives were identified for the whole plan area, the objectives identified in the 2009 Forest plan are largely still relevant to this Land Management Plan:

5.1 Whole plan management objectives

Objective 1: Protect & enhance designated conservation sites within and adjacent to the LMP area. Clais Dhearg SSSI, Coille Nathais SSSI, Glen Nant SSSI and Barran Dubh SSSI, all of which form part of the Loch Etive Woods SPA, are potentially affected by management activities that will be derived from this LMP.

Objective 2: Restore PAWS areas to create wider landscape scale NBL linkages. This objective is linked to objective 1,in that it offers the opportunity to increase the resilience of these conservation sites. It should also be remembered that scale and linkages can bring problems to conservation sites as diseases and undesirable colonists can also benefit from enhanced linkages. A reduction in the mixed conifer element with its replacement by native woodland will also potentially have adverse impacts on red squirrel and wood ant.

Objective 3: Timber production from a wide range of conifer species with the emphasis on matching species with site. The woodlands with the exception of Glen Nant currently hold a diverse stock of conifer timber, and this situation is likely to prevail over the next ten years as the shift to native broadleaved woodland is incremental. Thinning offer the potential to deliver a range of mixed conifer products while enhancing the final sawlog element. Over the course of the next crop rotation the areas suitable for productive diverse conifers will decline as the better ground is converted to native woodland. This objective is therefore subsidiary to objectives 1 & 2.

Objective 4: Evaluate the PAWS restoration areas for productive broadleaves. This approach offers the opportunity to meet multiple demands and make a productive asset out of areas with an intrinsically high productive potential. Many of the PAWS areas would have been historically managed on an intensive basis in the past as Oak coppice. The semi strategic deer fence proposed for the Fearnoch PAWS restoration area

presents the opportunity to manage a mix of planted and regenerating hardwoods. Active management of hardwoods can mitigate some of the negative impacts associated with the wait and see approach.

Objective 5: Enhance the landscape by coupe design and restocking proposals. The key area for this objective is Inverawe where the landscape impacts of any activity are very high. Potential approaches are limited by past restructuring and the location of windfirm edges. Future restocking offers the potential to address landscape issues in the longer term and provide windfirm future coupes sympathetic to landform.

Objective 6: Maintain and enhance the recreational infrastructure. Although given a medium priority within the 2009 Forest plan consultation has indicated the high value that local residents place on Fearnoch in particular as a much loved recreational asset. Many of the features are low key and also facilitate management and harvesting access. The cost implications of suggestions arising from consultation are very variable, and budgets are constrained. A separate assessment of the feedback from the consultation process with regard to recreation is recommended. The actions proposed within the LMP are likely to be neutral/positive in relation to recreation, although the removal of specimen and diverse conifers in Fearnoch may impact adversely on recreational aesthetics.

Objective 7: Maintain and enhance water quality in relation to both private and public water supplies and the Loch Etive shellfish growing area. Identifying the location of infrastructure and catchments as part of the plan process, and following the UKFS Forests & Water Guidelines in relation to water will safeguard water supplies. This approach should be applied to both the LMP and derivative operational site plans.

Objective 8: Reduce the occurrence risk and potential impacts of *Phytophthora ramorum* by felling Larch areas at the earliest feasible opportunity. The approach to this objective is to remove areas of accessible Larch at the earliest opportunity where the crop can be harvested economically. This objective should be reviewed annually in light of the *P.ramorum* monitoring feedback.

5.2 Analysis

The delivery of each of the whole plan objectives has been analysed in terms of the opportunities and constraints in the table below. This in turn has influenced the design concept and subsequent management proposals in each zone as relevant.

6.2 Analysis and Concept – Whole Plan

Objective	Opportunities	Constraints	Concept
Objective 1: Protect & enhance designated conservation sites within and adjacent to the LMP area.	The LMP area is defined by Atlantic Oakwood conservation designations. There is an opportunity to increase the resilience of both adjacent designated sites and designated sites within the LMP area. This can be achieved by management interventions and restocking options that promote the development of a W17 type woodland both adjacent to and within these sites. The control and management of invasive species and deer are key activities in the pursuit of this objective. The LMP has demonstrated a good capacity for natural regeneration with abundant native seed sources and Jays to distribute acorns over wider areas. The	Many of the forest areas falling within designated sites or adjacent to them are highly productive conifer sites with good harvesting access, good roading and a tradition of active management. The economic loss arising from conversion to native woodland to both Forest Enterprise and the wider economy is therefore very significant. Ongoing management and control of deer and invasives is also costly with no revenue generated. Enhanced linkages can also facilitate the movement of pathogens and invasive species. Deer fencing may have knock on effects on adjacent open areas.	The plan development is based on the recognition that the protection of designated sites is a core objective for the National Forest Estate. Given the significance and scale of the Atlantic Oakwood sites and the potential to enhance them, then this and the associated PAWS restoration objective have been given the status of a priority objective. The balance between conservation and production can be difficult to make where there are very valid arguments on both sides, and the above approach was arrived at after extensive internal and external consultation. In line with the previous plan, areas of mature Beech within Inverawe will be retained due

Objective	Opportunities	Constraints	Concept
	creation of landscape scale linked areas of quality native woodland represents an opportunity to create a resilient ecological network of International Conservation significance.		to their high landscape value, but regeneration will be monitored and controlled within the SSSI.
Objective 2: Restore PAWS areas to create wider landscape scale NBL linkages.	This objective is integral to Objective 1 and provides the opportunity to create a robust ecological linkage between two discrete areas of the Loch Etive SAC, these being Clais Dhearg SSSI in the west and Airds Park & Coille Nathais in the east. There is also the opportunity to create wider ecological linkages with non designated areas of native woodland based on the riparian network. Many of the PAWS areas have demonstrated good potential for regeneration due perhaps to the abundant local seed sources, Jays as dispersal	The constraints for Objective 1 above relate directly to PAWS restoration. The establishment of native broadleaves is a costly exercise with a low or non-existent economic output. Many of the conifer crops that will be replaced also have a high aesthetic and recreational value, and key species such as Norway Spruce create habitat diversity. These diverse benefits derived from areas of mixed conifer will be lost over time as the PAWS area and associated non PAWS	Genarally PAWS restoration will proceed across the forest area as crops mature, however within the northern part of Fearnoch fellings of conifers will be brought forward in order to reduce the future seed source. The use of Continuous Cover Forestry (CCF) has been minimised to facilitate active PAWS restoration, as CCF can be a double edged sword for PAWS restoration. The gradual shift in site conditions is beneficial, but increasing light levels with limited opportunities for selective interventions can merely create a second rotation of

Objective	Opportunities	Constraints	Concept
	mechanisms and remnant soil mycorrhizal associations. Much of the PAWS area was historically productive intensively managed broadleaved woodland; there is potential to continue this historical tradition and mitigate adverse impacts on production. Productive management also has the potential to fund interventions that benefit the conservation value of the woodlands, creates economic and ecological diversity and makes good use of the past investment in an extensive road network. Areas of Long Established Plantation Origin (LEPO) have a history of mixed conifer forestry going back many years, and these areas could be managed as mixed	pockets are converted to native woodland.	vigorous conifer species such as Western Hemlock and Sitka Spruce. Rhododendron problems can also develop under CCF systems seeking to promote native woodland regeneration. On balance clearfelling and active post felling management is considered to be the best option for successful PAWS restoration of these sites. It is proposed to create a semi-strategic deer fenced area enclosing the whole of the north Fearnoch PAWS area as this is essential for reducing deer impacts. This will enable NBL regen to compete more effectively with aggressive conifers as the selective impacts of deer browsing are removed. It will also facilitate the growth of planted productive broadleaves and reduce the adverse quality impacts associated with deer

Objective	Opportunities	Constraints	Concept
	woodland with a strong element of diverse conifers of high conservation value. Appendix 5 is an assessment of the PAWS restoration Issues drawn up as part of the internal scoping process by the FES Native Woodland Ecologist.		activity. The management of PAWS NBL regeneration areas and planted productive NBL areas may be constrained by future budgetary conditions, and plant availability. Additional non PAWS areas within the above fenced area in Fearnoch will be restocked with NBL, either by planting or natural regeneration. Areas of LEPO outwith the core PAWS restoration area will be managed as diverse conifer areas with the focus on conifer species of high conservation value including Scots Pine and Norway Spruce. Given the nature of these sites and the protection required to ensure their survival then it is anticipated that a matrix of NBL regeneration will also

Objective	Opportunities	Constraints	Concept
			feature as an element in these stands as they mature.
Objective 3: Timber production from a wide range of conifer species with the emphasis on matching species with site.	The site is well suited to the production of timber and wood products from a wide range of conifer species. The site is well roaded and harvesting across much of the site is facilitated by smooth and gentle slopes with reasonable bearing capacity. Timber haulage in terms of access to the trunk road network is straightforward in relation to Fearnoch.	Much of the productive area that can accommodate a wide range of diverse conifers is located on PAWS sites and this reduces site diversity. In contrast much of the area outwith PAWS zones has a more limited range of species options, with Sitka Spruce being the only productive option in many areas. The removal of larch as a planting option on site due to *P.ramorum* has adverse landscape and productivity implications.	With much of the productive diverse conifer area being excluded from future conifer production due to PAWS restoration, the area suitable for (and stocked with) diverse conifers will fall over time. Diverse conifers will be established where site conditions and economic considerations allow, but fencing is required for the establishment of most of the softer conifer species. As indicated above areas of LEPO in Fearnoch will be restocked with Scots Pine & Norway Spruce to meet multiple landuse objectives. Across much of the site Sitka Spruce is the only commercial option, and the use of this cost effective and productive species balances the extensive

Objective	Opportunities	Constraints	Concept
			PAWS restoration work both economically and in terms of landuse balance. There is scope for assessing whether the younger SS plantings on Fearnoch north east of Deadh Choimhead could be enhanced by drainage or targeted fertiliser applications, as this could increase the overall site productivity and go some way towards compensating for the loss of productive area due to PAWS restoration.
Objective 4: Evaluate the PAWS restoration areas for productive broadleaves.	This objective is linked to both objective 2 & objective 3 and has the potential to partially mitigate the loss in production associated with the removal of large areas of productive conifers. An assessment of the soils and site conditions in Fearnoch indicates that there is potential for a matrix of planted productive native	Restoring PAWS via planting can lead to a loss of local diversity. The rotation length of oak is long and growth rates modest, with associated impacts on the economic productivity of this option. The developing woodfuel market offers the potential to actively manage hardwood stands and to create early revenue from	The search area for productive woodland is defined by the area enclosed by the proposed deer fence. Once the fence is in place the selection of sites for productive broadleaves can take place via a full assessment of the potential post felling. The existing soil map, site terrain and accessibility can all provide an indication of the areas that

Objective	Opportunities	Constraints	Concept
	species within a matrix of naturally regenerating native woodland focussed on the less productive areas and the riparian corridors. Active management of broadleaved woodland can deliver many biodiversity benefits as well as providing a productive element that can help to fund the integral conservation related activities that are a cost item. The proposed area for productive broadleaves is well roaded and access for thinning and silvicultural management is often straightforward.	thinnings. Deer control is essential. The management of PAWS NBL regeneration areas and planted productive NBL areas may be constrained by future budgetary conditions, and plant availability.	may be suitable for productive broadleaves, but a site specific post felling assessment using local experience and knowledge is essential. Local seed sources should be used for planted stock. Natural regeneration of broadleaves and even some softer conifer species can be accepted within these actively managed areas as the stand and species structure can be readily adjusted during the thinning cycle to balance economics and ecology. Setting the productive areas within a matrix of naturally regenerating native woodland has the potential to enhance the biodiversity value of both elements. The naturally regenerating areas could be non intervention areas, although management intervention may be required to control invasive species.

Objective	Opportunities	Constraints	Concept
Objective 5: Enhance the landscape by coupe design and restocking proposals.	Restructuring across the forest has been ongoing and the proposed felling coupes build on this existing structure. Much of the road network is in place and visual impacts are low across most of the forest area. The main areas of visual significance are Inverawe and the Fearnoch margin along Glen Lonan. The Glen Lonan area is already extensively restructured and windfirm margins tend to follow the landform. Inverawe offers more scope for landscape enhancement during restocking rather than felling. PAWS and SSSI restructuring can create more landscape diversity.	Inverawe has been well restructured on its lower slopes, with landscape and PAWS restoration complementing each other. Due to practical access and crop characteristics there is a concentration of mature conifer crop with limited windfirm boundaries on the upper slopes.	Work felling coupes to windfirm boundaries which give landscaped felling coupes of the right scale and sympathetic to landform where possible. Phase coupes to screen road creation in Inverawe. Use restocking to create better linkages between the upper parts of Inverawe and the lower slopes, but accept that species choice on the upper slopes is very limited. Create future windfirm felling coupe boundaries by layout of NBL and OG at restocking.
Objective 6: Maintain and enhance the recreational	All of the forest blocks have recreational value, including accommodating specialisms such as the Field Archery	Forestry activities and ecological considerations are not constrained by recreational access.	The LMP process acknowledges the significance of Fearnoch to local recreational users. Direct impacts on the silvicultural

Objective	Opportunities	Constraints	Concept
infrastructure.	Course. During consultation local feedback demonstrated the value many local people placed on Fearnoch as a regular walking venue. There is potential to explore the suggestions made during the scoping exercise that could enhance the recreational experience, including better waymarking and more all abilities access. Many consultees welcomed the fact that the forest was a dynamic working forest as this added interest to the regular visitor experience. Walkers with dogs can prevent deer from become settled in one area and consequently can play a role in dispersing damage impacts.	Available budgets are limited and recreational resources need to be targeted to where they will provide the highest net benefit.	approaches and timings adopted in the plan are limited. The separate recreational planning process needs to consider the feedback from the LMP consultation and to evaluate the proposals in light of budgetary constraints. The cost implications of the proposals arising from the consultation are very variable, with additional waymarking being low cost, and wider all ability user paths having a higher cost implication.

Objective	Opportunities	Constraints	Concept
Objective 7: Maintain and enhance water quality in relation to both private and public water supplies and the Loch Etive shellfish growing area.	The location of water supply catchments and infrastructure has been identified and recorded in the GIS database and within the LMP. This allows water supplies to be fully taken into account in terms of both the LMP and derivative operational documents. The UKFS in relation to Water is taken into account in both the LMP process and in subsequent operations. These protocols provide protection for water supplies and water quality in relation to the Loch Etive shellfish growing area, as well as for the wider riparian ecosystem.	The management of operations within water supply catchments requires ongoing liaison with users.	Maintaining & improving water quality is central to both LMP planning and operational management.

Objective	Opportunities	Constraints	Concept
Objective 8: Reduce the occurrence risk and potential impacts of *Phytophthora ramorum* by felling Larch areas at the earliest feasible opportunity.	Removal of Larch areas reduces the risk of *P.ramorum* outbreaks and the economic and structural impacts should an outbreak occur. Areas of Larch are often located in association with Spruce areas and this can improve the economics of harvesting Larch areas in advance of their optimum economic felling date.	There is a loss of landscape, ecological and timber diversity associated with the early removal of Larch, as well as direct economic costs from harvesting smaller material before it has reached its optimum age in terms of economic return.	Fell accessible Larch areas preferentially where this can be carried out to generate a positive cash flow. Enhance the road network to facilitate any potential fellings that may be required as part of any Statutory Plant Health Notice. Review policy annually in light of disease situation.

5.3 Implementation of whole plan objectives

These objectives and relevant design concepts extend across the whole of the LMP area and will underpin the management of the land across all the five management zones. Opportunities to implement these objectives will be identified in all the management zones wherever possible.

The whole forest objectives are underpinned by good practice set out in the UK Forestry Standard (UKFS) and are integral to the delivery of multi-purpose forestry. Across the forest, and on a management zone basis the whole forest objectives are not in conflict with each other, but the significance of these objectives may vary across the Management Zones.

Fearnoch: Thinned Norway Spruce delivering recreational benefits and habitat diversity

6.0: Introducing the Management Zones

The Taynuilt LMP has been divided into 3 simple management zones, each with common key issues, challenges and objectives that have informed the LMP. See Map below: M9 Management Zones Overview.
The Management Zones have been identified as follows:

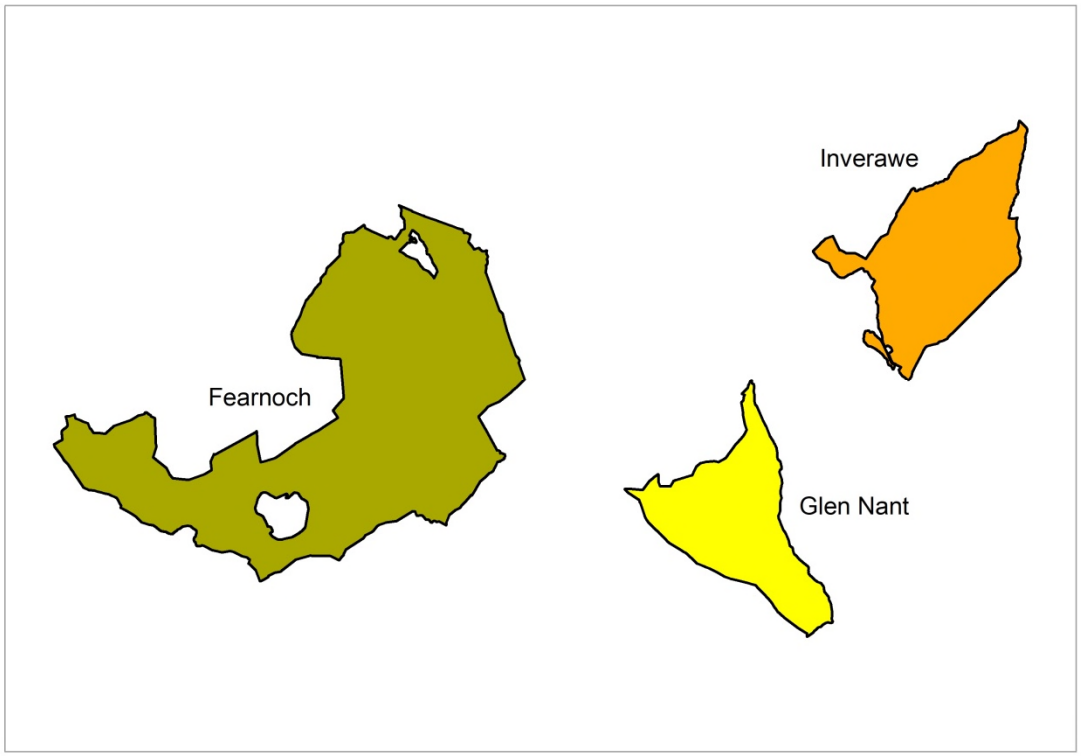
Section 7: Fearnoch

Section 8: Glen Nant

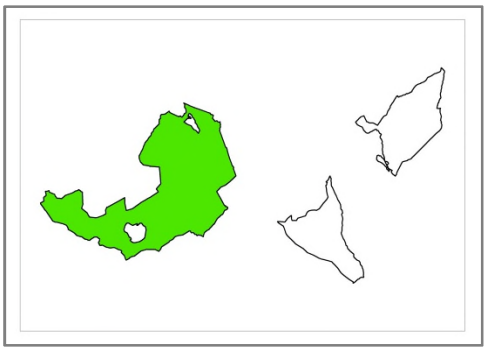
Section 9: Inverawe

The issues, challenges and relevance of the management objectives have been identified for each zone. For each zone maps illustrate:

- The current Species & Age Class (2 maps)
- The opportunities and constraints that affect each objective
- The design concept
- The management proposals (felling)
- The future habitat & species composition (restocking)



7.0: Fearnoch Management Zone



See maps *M7a & b* which show the current species in north and south Fearnoch respectively. Maps *M8a & b* show the Current age class in north & south Fearnoch respectively.

7.1 Issues

- PAWS Restoration.
- Protection of the adjacent designated sites.
- Timber production.
- Recreation.
- Public water supply.
- Deer management
- Archaeology

7.2 Key challenges

- Managing PAWS restoration over a prolonged time period in a dynamic and variable environment. Undertaking these high cost operations within a constrained budget, where the direct traditional financial benefits are hard to quantify.
- Monitoring and control of sites in relation to species composition and invasive challenges.
- Recreational management.
- Deer control and management of fencing costs.

- Implementing challenging productive broadleaved silviculture in an environment where experience, culture and markets are orientated towards softwood silviculture and marketing.

7.3 Management objectives

All of the LMP objectives are relevant to Fearnoch although Objective 6 relating to landscape is of lower significance.

See Maps: *M9a & b Fearnoch Opportunities & Constraints* (north & south) & *M10a & b Fearnoch Design Concept* (north & south).

Fearnoch has a long tradition of integrating recreation with productive forestry.

7.4 Felling and Continuous Cover Forestry (CCF) proposals – Fearnoch

7.4.1 Clear felling

Opportunities to manage the forest through clear fell have been identified and are included on Map *M11a & b Fearnoch Management*. Felling coupes are largely
dictated by past restructuring and crop characteristics. Within the northen part of While Continuous Cover Forestry is potentially applicable across wide areas in Fearnoch, the PAWS restoration priority dictates that clearfelling and active management of the restocks to achieve NBL establishment is the desired approach. In order to reduce the conifer seed source on the PAWS areas some crops will be felled in advance of their optimum economic felling age. Areas of Larch will be prioritised for felling as soon as the normal rotation length is approached. Access to Larch areas within Fearnoch is good should disease control fellings be required at short notice.

7.4.2 Thinning

Opportunities to thin existing woodland have been identified and are included on Map *M3 Thinning areas within first ten years of Plan*. Thinning areas are mainly located on the gentle slopes and well roaded areas within the PAWS restoration areas. The PAWS restoration policy of removing conifer crops in the north Fearnoch section in advance of the optimum economic felling age will reduce the thinning area available. Thinning may reduce tree stress and potential vulnerability to disease, and thinning may create a better microclimate for reduced disease transmission in both Scots Pine and Larch. Thinning also provides interim revenue and enhances the recreational environment in advance of NBL restoration. Thinning sites should be monitored as increased light levels and low deer pressure may increase the likelihood of undesirable regeneration. Effective deer control may also increase the competitive ability of broadleaves which could create welcome advanced regen of the right tree species prior to clearfelling.

Within PAWS areas thinning can be a double edged sword with thinning having the potential to favour shade tolerant invasive exotic species by increasing light levels on the forest floor. Conversely thinning out more aggressive conifer species can lead to reduced seed fall from undesirable species. The balance between these conflicting factors needs to be made on

a site by site basis based on monitoring, so while a significant area of Fearnoch is identified as having potential for silvicultural thinning, in practice many of these areas are likely to remain unthinned. It is however important to retain the option to thin in order to be able to respond quickly to site monitoring feedback.

7.4.3 Continuous Cover Forestry (CCF)

Opportunities to manage existing crops through CCF have been identified and are included on the Map *M11 (a & b) Fearnoch Management*.

Opportunities to establish species suitable for future management as CCF have been identified and these are noted on the *Future Habitats and Species Map M12 (a & b).*

As mentioned above, CCF has potentially a wide application within Fearnoch, but due to the specific requirements of PAWS restoration the area of CCF has been restricted to a small area of Norway Spruce that plays a significant role in the internal landscape and contributes to the recreational experience. In the longer term the objective is to establish NBL woodland on this CCF site, although scattered Norway Spruce could play a role in increased biodiversity and is unlikely to be a problematic species due to its non invasive nature.

7.5 Future habitats and species – Fearnoch

Future habitats and species proposals are included on Map *M12 (a & b).*

The proposal is to expand the NBL area and link the adjacent SSSI. Riparian and other PAWS areas will be converted to NBL to widen the linkages.

Mixed conifer species will be targeted on Long Established (woodland) of Plantation Origin (LEPO) areas and on the better soils. Sitka Spruce will become a more significant species outwith the PAWS restoration areas, and this will mitigate to a small extent the loss of productive capacity arising from PAWS restoration.

Enhancing areas of slower growing existing SS by drainage enhancement, or other measures to improve the nutrient status of the crop should be considered to obtain a higher return from funds already invested in crop establishment.

7.6 Management of open land

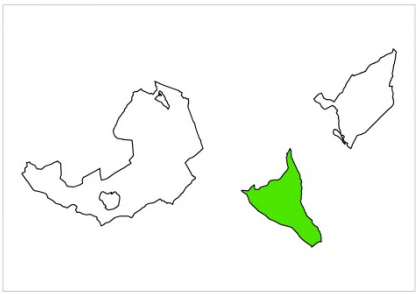
Open ground is limited on site and is mainly integral to the forest area rather than being in discrete areas with potential for alternate use. The hill known as Deadh Choimhead (lying within the LMP area but under different ownership) is an important butterfly habitat and its open nature is important given its historical role as a vantage point for watchers. Deer grazing is the only realistic management option and in consequence fencing off the hill should be avoided. Sitka Spruce regeneration should also be monitored in consultation with the owner.

Restructured productive conifers in Fearnoch with Deadh Choimhead in the background.

7.7 Natural Reserves

A small area (3.03Ha) of woodland was designated as a Natural Reserve under the previous plan. Where this area comprises Scots Pine and Native Broadleaves then this non intervention zoning will continue. A small area of Sitka Spruce has been removed from this zoning as retention would conflict with PAWS restoration objectives.

8.0: Glen Nant Management Zone



See map *M13* which shows the current species in Glen Nant. Map *M14* shows the current age class in Glen Nant.

8.1 Issues

- Considerable work has gone into restoring the Native Woodland Cover on this site.
- Ongoing monitoring and deer control are largely operational issues that are well understood, and form part of the partnership working approach between SNH & Forest Enterprise.
- The direction of travel established under the 2009 Forest Plan is supported by this LMP, and no strategic planning variations are proposed.

8.2 Key challenges

- Monitoring of NBL regeneration in terms of density, distribution and type.
- Monitoring and control of invasive species including commercial conifers.
- Deer control.
- Recreational access.

8.3 Management objectives

Glen Nant represents the first stage in the successful implementation of LMP Objectives 1 & 2. The nature of the site does not lend itself to productive forestry at this stage and a non intervention approach is favoured. In the longer term this could be re-evaluated as the trees develop and where management interventions could encourage biodiversity. Recreation access to the site is fairly low key but objective 6 is relevant to this site.
See Maps: *M15 Glen Nant Opportunities & Constraints & M16 Glen Nant Design Concept.*

8.4 Felling and Continuous Cover Forestry (CCF) Proposals – Glen Nant

8.4.1 Clear felling

Removal of conifer regeneration will take place as required.

8.4.2 Thinning

N/A

8.4.3 Continuous Cover Forestry (CCF)

N/A

8.5 Future habitats and species – Glen Nant

Restructuring proposals are included on Map *M17 Glen Nant Future Habitats & Species.*

The proposal is to establish native woodland using natural regeneration. Progress and potential future management options should be informed by ongoing site monitoring as discussed above. Regeneration in many areas is well established.

8.6 Management of open land

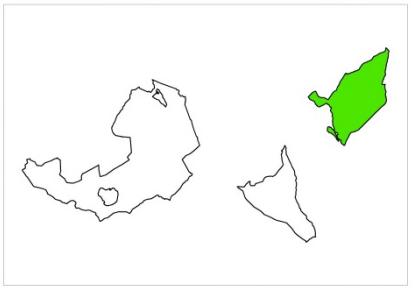
Open ground is limited on site in the sense of large contiguous areas with potential for alternate use. A matrix of open ground is a feature of most

native woodlands and adds ecological value and biodiversity. The open ground in Glen Nant will be managed as successional open ground where NBL regeneration will be accepted where it occurs. Significant areas of naturally occurring open ground (wet flushes, rocky outcrops and dense bracken) are also appropriate within Glen Nant as this enhances biodiversity. Some of these open ground habitats are themselves transitory in a longer time frame, with woodland becoming dominant over time.

8.7 Natural Reserves

A significant area (159.75Ha) of established native woodland was designated as a Natural Reserve under the previous plan. This non intervention zoning will continue. Removal of conifer regeneration and invasive non native species may require intervention in this area and this may require a review of any non intervention approach.

9: Inverawe Management Zone



See map *M18* which shows the current species in Inverawe. Map *M19* shows the Current age class in Inverawe.

9.1 Issues

- Highly visible area of woodland on steep slopes above Loch Etive.
- Extensive restructuring with the future felling area weighted towards the most visible upper slopes.
- Windfirm edges are limited and the upper mature crop occupies an exposed site with pockets of impeded drainage.
- Roading required to access felling area.

- Some work still remains to be done in removing small pockets of hard to reach conifers within the SSSI.
- Older policy type woodland on the lower slopes has a very positive landscape impact, but contains specimen Beech trees with the potential to seed across the SSSI area.

9.2 Key challenges

- Designing coupes that are both windfirm and sympathetic to landform.
- Restocking to create landscape diversity when species choice on the more visible slopes is constrained.
- Deer control and fencing.
- Monitoring of the SSSI and PAWS restoration areas to ensure the direction of successional travel is in line with objectives.
- Timber transport is constrained along the minor road and is subject to a management agreement that constrains operational timing.
- Linking felling and restocking proposals with the adjacent private sector commercial block to the east (no forest plan currently in place here).

9.3 Management objectives

Objective 5 (Landscape) is the crucial consideration in relation to Inverawe.

Objectives 1 & 2 relating to designated sites and PAWS are relevant, and much of this work has been implemented.

Timber production is also a key priority (Objective 3).

Recreational access across Inverawe is fairly low key due to the lack of circular routes. However access is taken along the shores of Loch Etive and along the forest road which gives panoramic views across Loch Etive and beyond. Recreation (Objective 6) is therefore important at Inverawe. The field archery course is also an important recreational feature.

Objective 7 (Maintain water quality) is relevant as there are a number of private water supplies derived from the forest, and burns within the forest lead into Loch Etive which is a shellfish growing area..

See Maps *M20 Inverawe Opportunities & Constraints & M21 Inverawe Design Concept.*

9.4 Felling and Continuous Cover Forestry (CCF) Proposals – Inverawe

9.4.1 Clear felling

Opportunities to manage the forest through clear fell have been identified and are included on the Management Map *M22***.** The focus of felling activity is on the upper slopes where the remaining first rotation crop has reached maturity. Windblow is a major factor already on site and while the felling proposal seeks to create coupes sympathetic to landform future wind impacts may negate this approach. Windblow on the upper slopes will have a high landscape impact and could represent a significant loss of timber revenue is it remains unharvested for long periods. The Coupe design should be evaluated and varied in response to windblow at the 5 and 20 year plan review.

9.4.2 Thinning

Opportunities to thin existing woodland have been identified and are included on Map *M3 Thinning areas within first ten years of Plan.* Thinning opportunities are limited on site due to crop age and past management. The areas indicated as having potential for thinning are the Field Archery course, which comprises mature mixed conifer which has been thinned, and the adjoining younger hardwood area which may have potential for productive hardwoods in the longer term with woodfuel provision providing revenue from thinnings within the next 5 to 10 years. Thinning of both these areas should enhance the forestry environment for the course and extend the lifespan of the stands.

9.4.3 Continuous Cover Forestry (CCF)

No areas have been identified as suitable for CCF within Inverawe.

9.5 Future habitats and species – Inverawe

Restructuring proposals are included on Map *M23.*

The proposed restocking builds on past activity and could be summarised as Native woodland restoration across the SSSI and PAWS areas, mixed conifers across the lower and mid slopes and landscape SS on the upper

slopes. NBL riparian linkages are crucial in terms of determining future felling coupes, providing landscape diversity, ecological linkages and diversity on the upper slopes.

9.6 Management of open land

Open ground is limited on site and the open hill above the site is part of the Glen Etive & Glen Fyne Golden Eagle SPA. Consultation has suggested that the limited area of forest adjacent to the extensive SPA will have negligible impacts. Due to the terrain the opportunities for improving the landscape fit of the Forest on its upper margin are very limited. Small scale open ground adjustments will have no impact, and a large scale pulling back of the woodland margin would lead to loss of a significant area of productive forestry, with any benefits potentially negated by the presence of the commercial woodland adjacent to the eastern march.

9.7 Natural Reserves

A small area (7.72Ha) of established native woodland planting with natural regeneration was designated as a Natural Reserve under the previous plan. This non intervention zoning will continue as the area as the site and species composition is well suited to the development of a diverse evolving ecosystem.

10: Long Term LMP Proposals

The long term proposals in the LMP will lead to increased structural diversity & an increase in the age range of the forest over the next twenty years. This will be achieved through felling and restocking over an extended ten to twenty year time scale. The consequence will be a more diverse forest environment with greater climate change resilience, as well as increasing habitat linkages.

The PAWS restoration & associated NBL expansion over the next twenty years will lead to an enhanced ecological network linking designated sites.

The restructuring of most of the first rotation crop in Inverawe will be completed within the next twenty year period.

Species Group	**Species Group @ 2020 Area Ha**	**Species Group @ 2020 %**	**Species Group @ 2029 Area Ha**	**Species Group @ 2029 %**	Species Group @ 2039 Area Ha	Species Group @ 2039 %	% Change 2020 to 2039
Felled	**281.33**	**15%**					
Mixed Broadleaves	**76.35**	**4%**	**82.67**	**4%**	**85.22**	**4%**	**0%**
Diverse Conifers	**184.99**	**9%**	**196.75**	**10%**	**161.33**	**8%**	**-1%**
Native Broadleaves	**294.75**	**14%**	**675.88**	**33%**	**854.60**	**42%**	**28%**
Open Ground	**275.51**	**12%**	**274.48**	**13%**	**249.37**	**12%**	**0%**
Sitka Spruce	**928.17**	**45%**	**811.32**	**40%**	**690.59**	**34%**	**-11%**
Total	**2041.10**	**100%**	**2041.10**	**100%**	**2041.10**	**100%**	

Table showing target species composition over the twenty year plan period.

11.0 Critical Success Factors

The main critical success factors within the ten years of this plan are:

- Deer control & fencing in relation to PAWS restoration & establishment of softer conifer species.
- Targeting of productive broadleaved areas and active management of these areas to meet multiple objectives and deal with the threats to PAWS restoration. Operations linked to PAWS restoration by regeneration and planting can have a high cost with no direct financial yield. LMP aspirations may need to be adapted to meet budgetary constraints.
- Retaining the recreational value of the woodlands with a particular focus on Fearnoch.
- Enhance the recreational value of Fearnoch where budgets allow, including assessing the potential for an expansion in all ability access.
- Balance the thinning programme with economic considerations and the fact that most of the thinning areas will revert to NBL. Increased light levels over a long time period may lead to the establishment of an undesirable understory of invasive plants which may complicate the restoration process.
- Retain water quality within the public water supply catchment, and in relation to private water supplies.

12.0 Management Prescriptions

12.1 Forest Management Types

Clearfelling

This harvesting approach will be utilised where economics, access or soil conditions preclude Continuous Cover Forestry. It is also the preferred

option in the PAWS restoration area due to a number of factors as discussed earlier in the plan. Coupe design will seek to work with the landform and scale will vary with larger coupes on the upper slopes scaling to smaller coupes on the lower slopes. Building on the current age class diversity will be an objective, however the fast growth rates associated with the dominant SS cover may limit the options for retaining crops past the standard 30 to 50 year rotation length.

Within the PAWS restoration areas in North Fearnoch clearfelling will be brought forward to reduce the seed source in these areas. Felling should take place only when crops can be felled to generate a surplus revenue. However there will be significant additional loss of future income from cutting crops well ahead of their economic optimum.

Adjacency (UKWAS requirement to diversify forest structure by having a minimum of 2 year height growth differential on adjacent felling coupes): Adjacency is of lower significance for areas being restored to PAWS as the restocking result for these areas will be a uniform area of permanent forest cover with an integral structural diversity. Areas being restocked with a clearfell regime anticipated and where phases are sequential will be managed as follows: Areas of adjacent previously felled and Phase 1 coupes will be managed in terms of restock timing to ensure that there is a 2m height differential with delayed restocking being used as appropriate. The same approach will be used for other coupes where there are adjacency issues (eg a Phase 2 Coupe adjacent to a Phase 3 Coupe).

Clearfelling is used as a management approach to remove Larch species where there is Phytopthora infection, and to salvage windblow.

Clearfelling provides more flexibility for restructuring. Large coupes can be restructured with more diverse species and new internal windfirm boundaries to provide an enhanced landscape in the second rotation and more coupe options. Large clearfells also offers an enhanced area for deer control and the potential to establish deer sensitive species without fencing.

Continuous Cover Forestry (CCF)

While the northern section of Fearnoch has large areas that are suitable for CCF, the PAWS restoration objective dictates that clearfelling offers more control over outcomes as well as medium term economic benefits.

A small area of CCF is proposed for an area of Norway Spruce in Feranoch which has high recreational utility and for the woodland constituting the Field Archery Course in Inverawe.

Long Term Retentions (LTR)

Some areas of crop have been identified as areas of Long Term Retention (LTR). These are often areas with severe access issues or where it is environmentally beneficial to retain these areas. Subsequent plan reviews may move these areas into CCF management or integrate future felling with the surrounding crop as appropriate.

12.2 Thinning

No thinning other then the removal of conifer regeneration is proposed for Glen Nant. Within Inverawe thinning options are limited due to the current crop age, type and terrain.

Within Fearnoch there are potentially large areas with thinning potential and many of these areas have been thinned in the past; however most of these area fall within the PAWS restoration area where thinning may encourage the regeneration of shade tolerant invasive conifers. Conversely thinning can be a useful tool for PAWS management by facilitating the selective removal of more competitive conifer species. The balance between these two facors will determine whether thinning is undertaken and this will be informed by site monitoring. So while a large potential silvicultural thinning area has been identified in map M3 the actual area thinned is likely to be lower.

Thinning can increase tree resilience and create microsite climatic conditions that are less beneficial to a range of pathogens.

12.3 Future Habitats & Species

Permanent native woodland habitats creation is proposed throughout the woodland to link the current NBL resource, PAWS restoration areas, and designated sites. The W17 NVC type would reflect the climax ecology of the locality.

Within the PAWS restoration area a matrix of managed productive broadleaved woodland established by planting and non intervention NBL areas established by

natural regeneration would meet multiple objectives and would still meet the objective of establishing a W17 type woodland.

Much of the existing mature NBL areas have been historically managed as Oak coppice and the proposal is to retain managed Oakwoods as the major species within the productive woodland areas. The precise management of these areas for production has yet to be determined, but a coppice with standards approach could produce a regular crop of hardwood woodfuel and quality timber in the longer term. Coppice also offers benefits in terms of decreased vulnerability to deer damage. The use of local seed sources is clearly desirable when establishing NBL by planting on PAWS. Tree species diversity on former Oak coppice sites is often low due to the intensity of past management with alternative native species having been regularly weeded out. Planting can also help to reintroduce missing elements from the W17 species list.

Areas of mixed conifer will be targeted on suitable sites which can be protected from deer impacts. Norway Spruce, Scots Pine and Douglas Fir will be the dominant diverse conifer species proposed, but post felling site appraisal will inform the final species choice.

ESC indicates that a wide range of species are potentially suitable for the site on the lower and mid slopes, however species choice on much of the upper slopes is largely limited to Sitka Spruce.

As indicated above, the ESC data suggests that there are a wide range of species potentially suitable for the lower slopes of the site, and this remains fairly constant under climate change models. Species range declines with altitude. Site amelioration via drainage, fertiliser and the first rotation may negate many limiting factors and widen species range in practice.

Climate change models suggest that the general trend will be towards a significantly warmer climate with higher winter rainfall and lower rainfall in the summer leading to a partial soil moisture deficit during the summer months. Increased rainfall and sudden heavy downpours may exacerbate the potential for slope instability in vulnerable areas, and future forest cover and species choice will take this into account.

In terms of the more general species choices for the next rotation the climate change models have limited impact on species choice according to ESC models. However this level of climatic change is likely to interact in the longer term with soil characteristics and this may have a positive impact on soil structure and widen the range of species potentially suitable for the site. There are also threats

to the suitability of SS as a timber species if severe summer droughts become the norm.

A number of other factors have been considered in addition to ESC data, and these include:

- Current actual growth rates.
- Economic value & physical volume production.
- Landscape.
- Ecology and linkages.

The impact of tree diseases has guided species choice. *Phytophthora ramorum* in Larch; Dothistroma needle blight (DNB) & Ash Dieback have all had an impact on species choice and crop management across the UK. Within the LMP area Larch and Ash would have played a key role in both landscape and production, but these species are currently unavailable as restocking options. This situation should be reviewed at intervals in light of prevailing guidance.

LMP provenance guidance chart

Species	Guidance
SS	Improved QSS standard throughout
VPSS	Limited use in best locations
SP	High rainfall type specified as standard. W20
NSP	From the nearest appropriate zone near CFR areas
LP	Only ALP being used in mixture with SS on poorer sites
DF	Seed stand or coastal origin
ESF	Czech or central European
NF	Registered seed stands
GF	Scottish registered seed stands
WH	Registered seed stands with low fluting
WRC	Scottish seed stands
NS	Seed stands, Eastern European or Harz
JCR	Northern Japanese range
NBL	Region of Provenance 10, Native Seed Zone 106
XC	PSSB will advise on any other minor species
Notes: PSSB can provide the most up to date guidance on provenance selection including advice on best suited seed stands. Virtually all seed supplied by PSSB comes from registered seed stands and is based on geographic area compatibility. Use of VPSS has declined as seed orchard QSS improves and this also has a wider genetic base for resilience purposes.	

12.4 Operational Access

The forest areas are generally well roaded, and in Fearnoch a short 142m spur is proposed to access a Phase 1 Felling and a longer road extension of 568m is required to access a Phase 1felling containing significant areas of mature Larch. In Inverawe a Prior Notification has been submitted/approved (04/10/18) for a road extension of 425m to harvest mature timber along the upper slopes. It is proposed to extend this section by 918m which will require a Prior Notification. An EIA determination will be submitted as part of the LMP for all of the proposed new roads required within the first ten years of the plan.

Access tracks are required to facilitate restocking on sites across the plan area, and the layout and extent of these tracks will be determined post felling following a full operational site survey. A number of ramps will be required to enable harvesting machinery to access felling coupes from the forest road. The precise location of these will be determined during operational planning but the expectation is that there will be up to a maximum of 6 ramps per felling coupe. Ramps will be approximately 3m wide and up to 15m long; they will not be treated as permanent features and will be removed when no longer needed.

Slopes are a constraint in places with winch working and cable cranes being required to work many areas effectively and safely. The relatively dense road network facilitates winch or cable crane harvesting. In some limited areas crops are practically inaccessible with even hand cutting being constrained by H&S concerns.

12.5 Deer Management

See Appendix A4: Deer Management Plan.

Reducing deer numbers and associated negative impacts is vital in order to deliver a range of plan objectives.

Deer activity across the forest is negatively correlated with human activity. Many areas on the lower slopes show medium deer impacts with significant regeneration of vulnerable species. On the upper slopes observation would indicate that deer (and feral sheep) grazing have a significant impact on regeneration and biodiversity. In addition to potential higher activity in these more secluded areas, the impact on regeneration may also be derived in part by slower growth rates widening the vulnerability window. There is also relatively high activity along the lower margins where this borders rough grazing that the deer use at night.

Deer often seek shelter in woodland in heavy weather, and consequently the upper forest margins are often areas with high levels of deer activity in all circumstances. When control efforts are intensified, then the deer's use of dense cover increases and nocturnal behaviour becomes the norm, and this again intensifies the grazing/browsing pressure on the woodland fringe.

Restocks of vulnerable species are currently deer fenced, and it is proposed to continue with this approach. The PAWS restoration area in Fearnoch will be deer

fenced to provide a semi-strategic deer fence that will facilitate the long term effective restoration of these areas and reduce the impacts of selective grazing pressure on NBL regeneration.

Land adjacent to Fearnoch on the northern margin is managed with different deer control objectives to those of Forest Enterprise. Deer fencing has the potential to affect deer activity across the march within the designated sites, however by effectively removing areas of dense conifer deer cover and actively culling deer within the enclosures adverse impacts may be limited.

Effective deer control involves committing resources in terms of personnel and equipment in a strategic way. The provision of good access for stalking and carcass extraction means that this commitment of resources is put to the best use.

Deer glades across the site may be of limited value and would probably represent a poorer investment in terms of resources than improving access. In the longer term deer glades within the larger NBL areas would be beneficial.

The proposed extensions to the road network and restructuring will also improve the deer control environment and allow the deer management resource to be more efficiently used.

When deer control intensifies the law of diminishing marginal returns quickly comes into play, with escalating resources being required to control a declining number of deer. Deer are also very responsive to hunting pressure, and a strategic grouping of vulnerable restocks combined with a focussed control effort on these areas during establishment, has the potential to deliver adequate protection, cost effectively.

Large scale felling coupes and a reasonable number of similarly phased fellings across the Forest can help to reduce deer impacts on restocks. Conversely large areas of thicket stage conifers can make deer control more problematic. In these circumstances moving deer in a coordinated manner can be the only effective control option.

12.6 Open Ground Management

Deer control is currently the main tool available for open ground management. Feral & marauding sheep are also a factor, so grazing control of sheep by

maintaining adequate march fences and liaising with neighbours is also important.

Deer grazing on the open ground on the hill at Deadh Choimhead is essential in order to maintain an open habitat, and this is important both ecologically and to maintain the viewpoint vistas. The hill lies outwith the plan area.

In terms of recreation, open ground along paths and at key viewpoints is important and these need to be considered in operational recreation plans. Clearfelling also creates transient open ground along recreation routes which can provide a range of novel and dynamic viewpoints.

12.7 Public Access & Core Paths

An integrated approach is required between the larger scale operations determined by the LMP and the smaller scale recreational plans required for managing the significant number of high value recreational assets within the LMP area. In addition the wider landscape quality is a key consideration and this is determined by large scale forest management activity. This integrated approach is partly facilitated by communication, having structures in place to encourage communication and involving the Communities, Recreation & Tourism (CRT) section in the LMP process.

Path closures will be minimised and diversions used. Clearfells can have a positive impact by opening up transient open views from elevated paths.

Access considerations within Glen Nant and Inverawe relate largely to maintenance.

The Field Archery Course in Inverawe is a popular venue and plan related activity to support this facility is focussed on the use of thinning to seek to maintain the stand as a feature. Thinning the adjacent NBL area in time will also provide an extension to the site, or an alternative venue should access to the main mature conifer area be constrained by operations or windblow.

Feedback from the consultation process highlighted the importance of Fearnoch as a regular recreational destination for local residents. A number of suggestions have come forward in relation to enhancing recreational access within Fearnoch and these will be evaluated by the CRT team in light of available resources.

12.8 Heritage Features

There are a number of unscheduled sites and these are identified on the District GIS Layer, and these will be protected during operations in line with the UKFS. If new sites are found these will be mapped and recorded and protected from operations.

12.9 PAWS Restoration

There are a number of areas across the site where there are records existing on the Ancient Woodland Inventory. Ancient of Semi Natural origin (category 1a and 2a) woodlands will be restored as felling progresses.

Within the areas identified as Long Established of Plantation origin (1b, 2b and 3), the proposal is to establish or maintain mixed conifers with a NBL element.

PAWS restoration is a major theme of the LMP and this issue has been considered throughout the LMP.

12.10 New Woodland Creation

Minor adjustments to integral open ground areas are proposed, but these are minor in extent and would not constitute woodland creation.

Appendix I: Assessment of success of previous plan

Previous Plan Objective	Assessment of progress
Producing wood and marketable timber	Clear fells & thinning during the current Forest Plan have been in line with forecasts and have produced a significant volume of marketable timber.
Managing or regenerating Forests or Woodland	Felled areas have been effectively restocked and regeneration within Glen Nant is progressing. Deer pressure and other factors on some of the areas left to be restored to NBL by natural regeneration have resulted in the fairly slow regeneration of some of these areas.
Landscape Enhancement	Coupe design and restocking has been in line with the Forest Plan and has generally worked to enhance the landscape.
Maintaining and Creating Wildlife Habitats	The initiation of the PAWS restoration process in Glen Nant has been a significant step and very positive from an ecological perspective. Elsewhere riparian enhancements and an expansion of native woodland has maintained, created and linked wildlife habitats. Thinning of the diverse conifer elements in Fearnoch has enhanced red squirrel and wood ant habitat.
Recreation	Recreational facilities have been maintained and forest restructuring has created an interesting and diverse recreational environment. The

	Field Archery Course has been effectively relocated to a new long term venue.
Conserving Archaeology	Archaeology has been located mapped and taken into account operationally in terms of felling the restocking. The setting of features has also been enhanced.
Water	Water supplies have been protected during operations, and enhancements to riparian zones will create long term benefits in terms of water quality and resilience to adverse impacts.

The Plan objectives have been largely met, and are still relevant. They have informed the objectives identified for this new plan, alongside additional information obtained during the scoping exercise.

Appendix II: Background information

The majority of the land that lies within the Taynuilt LMP has been managed by the Forestry Commission since 1952.

II/1.0 Physical site factors

1.1 Geology, soils and landform

The solid geology underlying the site is composed largely of Mafic Lava and Mafic Tuff across Glen Nant & Fearnoch, with Mafic Igneous rock across Inverawe. There are only limited areas of superficial deposits comprising sands and gravels of marine origin.

The soils range from brown earths to ironpans with some podzols. Peaty and indurated ironpans occur on the upper slopes. Areas of deep peat are limited and are reflected in poorer growth and checked crops.

The landform of Glen Nant is characterised by the river valley with the upper slopes being more varied and knolly.

Fearnoch has a varied relatively small scale landscape of small rolling hills with a plateau like appearance across much of the area.

Inverawe is a small scale area within a large scale landscape and occupies two sweeping ridges that drop to Loch Etive.

1.2 Climate [1]

Mean annual temperatures in this region are about 9 degrees centigrade, with February the coldest month and July the warmest month. West Scotland is one of the more exposed areas of the UK, with strong winds being associated with the passage of deep depressions. While the glens and lower slopes are sheltered by terrain, this region is characterised by the strong gale force winds that are more frequent on exposed hill tops and elevated slopes. The average annual rainfall for western Scotland varies between 1000mm and 3500mm, considerably wetter than the east coast of Scotland. The continentality is classed as Oceanic.

[1] Summarised using data from the Met Office Regional Climate site for Western Scotland: http://www.metoffice.gov.uk/climate/uk/ws/

Therefore, while the forest is generally accessible all year round, both thinning and felling programmes need to take into account the generally high rainfall levels as well as storm rains associated with sudden cloudburst.

Fearnoch & Glen Nant are generally moderately sheltered with DAMs ranging from 6 to 16. The lower slopes of Inverawe fall within the same exposure range, but the upper third of the site is moderately exposed with a DAMS of 18.

1.3 Water

There are 14 private water supply points within the forest.

The southern section of Fearnoch Forest lies within the catchment of Loch Nell which is the main water supply for the Oban area.

When felling and restocking are carried out, the UKFS Forests & Water Guidelines will be strictly adhered to. Timber extraction will normally avoid crossing burns or main drains, but, where necessary, each crossing point will be piped or bridged.

All felling and restocking will comply with the Controlled Activities Regulations (CAR) 2011 General Binding Rules with respect to appropriate buffer strips between any new planting and the watercourses and water bodies.

Site assessment prior to forest operations will identify recommended actions to meet these requirements.

The status of the water courses in the LMP area is “High” & “Good” with the exception of the Nant River in Glen Lonan which is classed as being in a “Moderate” condition.

II/2.0 Current land management

2.1 The existing forest

2.1.1 Species, age structure and yield class

The LMP covers an area of 2041 Ha, comprising 1113 Ha (54%) of conifer forest, which is predominately Sitka Spruce, 371 Ha (18%) of Broadleaves and 252 Ha (12%) of open ground. Felled areas total 305Ha (16%) and

these were former conifer areas. Much of the felled area is currently being restored to native woodland by natural regeneration.

Sitka Spruce is currently the largest component of the forest. The broadleaves are mainly native with Oak & Birch being the dominant species.

The broadleaves are scattered across the plan area with the main areas being located within Glen Nant and Inverawe.

Norway Spruce , Douglas Fir and Larch are the most common diverse conifers across the LMP area.

2.1.2 Access and Roading

The forest areas are generally well roaded, and in Fearnoch a short 142m spur is proposed to access a Phase 1 Felling and a longer road extension of 568m is required to access a Phase 1felling containing significant areas of mature Larch. In Inverawe a Prior Notification has been submitted/approved for a road extension of 425m to harvest mature timber along the upper slopes. It is proposed to extend this section by 918m which will require a Prior Notification. An EIA determination will be submitted as part of the LMP for all of the proposed new roads required within the first ten years of the plan.

Access to the public road network is straightforward in the case of Fearnoch, with the forest road exiting directly onto the A85 trunk road. Access via Glen Lonan is no longer taken for timber haulage. Recreational access and car access to the car park are issues for timber haulage and is an operational site management issue.

Inverawe is accessed via the minor U30 road and a Timber Traffic Management Plan is in place which places a number of operational restrictions on haulage. Significant amounts of timber have been successfully extracted from the forest under this agreement. In the longer term the expanded NBL area, which will be largely non intervention, will result in a diminished volume of traffic in the following rotation.

2.1.3 Continuous Cover Forestry (CCF) Potential

While much of Fearnoch has good potential for CCF and has been extensively thinned, the PAWS restoration objective suggests that clearfelling is more likely to achieve the desired result of an expanded native woodland area. CCF has therefore been restricted to a small area of Fearnoch and Inverawe to meet recreational objectives.

2.2 Biodiversity

2.2.1 Habitats and species

Red Squirrel, Pine Marten, Wild Cat, Badgers, Bats and Otters are present in the forest, and wood ants are common. Scheduled birds nest within the forest and will be considered in line with the law and best practice in relation to any operations.

While there are overall ecological benefits from PAWS restoration, the removal of diverse conifer species, in particular Norway Spruce is likely to reduce overall biodiversity. The landscape scale habitat creation and the robust linkages created by the PAWS restoration process increases the resilience of the Atlantic Oakwood habitat and increases the scope for species which are woodland specialists.

The LMP area features significant areas of mature native woodland of high conservation value and much of this area is designated.

2.2.2 Riparian habitat

Fearnoch drains to the south into the River Nell and to the north into the Allt Nathais. Glen Nant drains into the River Nant which runs along the eastern margin of the forest and Inverawe is drained by a number of small burns into the River Awe and directly into Loch Etive.

Many of these areas carry high quality diverse native woodland with good linkages with surrounding woodland. The area and quality of these native woodland areas will be enhanced as restructuring progresses, and the linkages with larger areas of existing and created native woodland will increase the resilience of these native woodlands.

2.2.3 Invasive species

Rhododendron is present across the site with the focus on the lower slopes. Past control efforts have been effective but ongoing control and monitoring is required.

Small areas of Japanese Knot Weed occur along the shoreline. This is currently outwith the LMP area, but should be monitored.

2.2.4 Pests and diseases

There is no active P ramorum in the LMP area at the time of writing.
Ash dieback is widespread across the area and will impact negatively on landscape and biodiversity.

2.3 Landscape, landscape designations and visibility

Inverawe lies within the North Argyll Area of Panoramic Quality.

2.3.1 Landscape character

The Argyll & Firth of Clyde Landscape Character Assessment classes Fearnoch & Glen Nant as being “Craggy Upland”, with Inverawe being classed as “High Tops”.

Craggy Upland is characterised by an irregular landform with rounded knolls, rock outcrops and low lying lochs. Many these features are small to medium scale. The specific landscape guidelines relating to forestry include: managing and extending broadleaved woodland; designing forest landscapes to reflect landform and conserving archaeological features.

The High Tops represents a large scale landscape with a rugged and diverse terrain dominated by high mountain peaks and wide sweeping glens and conifer plantations on the lower slopes. Specific forestry guidelines include an expansion of native woodland sympathetic to landform, and conserving the setting of local landscape features.

2.3.2 Visibility and Viewpoints

See map M1 Location & Viewpoints.

The rolling terrain and wider woodland cover result in Glen Nant having a low landscape impact. A similar situation applies to Fearnoch in general; however along parts of Glen Lonan the forest has a higher visual impact with the southern margin of the forest being more visible and occupying steeper slopes along the north side of the Glen. Both Glen Nant and Fearnoch have a higher visual impact from elevated viewpoints including Ben Cruachan, although many of the views from height are very distant.

Inverawe has a very high visual impact from a range of communities around Loch Etive including Taynuilt and from the A85 trunk road and the Oban to Crianlarich railway line. The A85 is a major tourist route. The forest is also visible in passing from the A828 at Connel.

2.4 Social factors

2.4.1 Recreation

The recreational use of the forest is focussed on local users with Fearnoch in particular being a much loved local asset, with a wide range of regular users.

Fearnoch is also popular with families and visitors who appreciate the range of route options available and this includes circular routes. The forest tracks are also very popular with cyclists with wider links available to the National Cycle network.

Glen Nant offers more low key recreational access with car parking and short walks through the mature native woodland.

The focus of recreational activity in Inverawe is the Field Archery Course which is well used. Through routes along Loch Etive also pass through the forest and views from the forest road are spectacular. The lack of circular routes limits the attraction of the forest for walkers to some extent.

2.4.2 Community

The village of Taynuilt lies at the centre of the LMP area and is a thriving community with strong links to Scottish Forestry. There was considerable interest in the LMP with good turn outs to consultation events and a wide range of constructive feedback received.

There is also a relatively high population density across the adjacent land between the forest blocks. The village of Fearnoch which lies within the forest itself, was a former forestry village with strong links to the Forestry Commission and the development of forestry in Scotland.

While the surrounding communities have a strong farming and forestry connection, tourism is an important employer in the area and Oban is a short commute to the south. The surrounding communities are therefore diverse.

2.4.3 Heritage

When felling and restocking are carried out, the Forests and Historic Environment Guidelines (2011) will be strictly adhered to. Site assessment prior to forest operations will identify potential areas of archaeological interest and detail recommended actions to ensure that the Guidelines are implemented.

Archaeological sites encountered during forest operations will be built into the network of open spaces defined in the restocking plan, and contribute to the habitat network as open glades. These additional sites not yet identified will require amendments to the restocking plan to accommodate the additional open space.

2.5 Statutory requirements & key external policies

The following official designations exist in the plan area:-

- Wayleaves.
- Ancient woodland sites.
- North Argyll, Area of Panoramic Quality.
- Private Water Supply Catchments
- Clais Dhearg SSSI (Adjacent)

- Airds Park & Coille Nathais SSSI (Adjacent)
- Glen Nant SSSI
- Barran Dugh SSSI
- Loch Etive Woods SAC
- Core Path Policy
- Argyll & Bute Council Cultural Heritage Plan

Reference/Policy Documents

UKWAS 4.0

Getting the best from our land. A Land Use Strategy for Scotland 2016 – 2021

SNH Landscape assessment of Argyll & the Firth of Clyde No 78.

SNH Constructed tracks in the Scottish Uplands

The UK Forestry Standard
UKFS Forests & Biodiversity
UKFS Forests & Historic Environment
UKFS Forests & Water
UKFS Forests & Landscape
UKFS Forests & People
UKFS Forests & Soil
UKFS Forests & Climate Change

FC Practice Guide: Deciding future management options for afforested deep peatland

FC: Thinning Practice A Silvicultural Guide.

FC Practice Guide: Managing forests in acid sensitive water catchments

FR Information Note 13/06. Operational Experience of Continuous Cover Forestry: UK Case Studies.

FC Guidance Note: Managing invasive and non-native forestry species

Strategic Guide for the Conservation Management of Open Habitats on Scotland's National Forest Estate

Managing woodland access and forestry operations in Scotland

FC Information Note: Transforming even aged Conifer Stands to Continuous Cover Management

FC Practice Guide: Managing and controlling invasive rhododendron

FC Advice Note: Replantign Sites Affected by *Phytophthora ramorum*

FC PolicyNote: Control of Woodland Removal

FC Practice Guide: Forest Design Planning

Appendix III: Forest Design Plan Consultation Record

Consultee	Date contacted	Date response received	Issue raised	Forest District Response
CONFor	13/3/2018	14/3/2018	Major loss of productive forest area arising from PAWS restoration. Considerable investment in roading potentially lost.	Timber production is a key objective for the site, and the points relating to loss of productive area are understood. The layout of designated sites and PAWS within the LMP area offers a rare opportunity to create significant ecological landscape scale linkages and enhancing designated site resilience. This meets the FE clear obligations in relation to designated sites included the SAC. The conversion to NBL will be phased over a number of years and productive forestry will continue for this period. The potential for productive broadleaves on a significant scale will be explored within the plan, and the north end of Fearnoch is ideally suited for this option.

Argyll & Bute Council: Traffic & Development	13/03/2018	20/03/2018	Extraction of timber from Glen Nant should exit via the West Loch Awe Timber Haulage Route (WLATHR).	No further timber extraction is proposed for Glen Nant. Timber haulage in Inverawe is sensitive and a Timber Transport Management Plan is in place to cover haulage activities. This has been successfully implemented for significant clear fell areas over the last 5 years. In the longer term timber production from Inverawe will be fairly modest due to the small area and the restoration of PAWS areas reducing the productive area in the next rotation.
SEPA	13/03/2018	12/04/2018	The plan should consider the impact of management on flood risk downstream. The plan should specifically refer to and follow the guidance within the Water Framework Directive and UKFS Guidelines and GBRs. The plan should include measures for dealing with invasive plant species that threaten the water environment if relevant. CCF opportunities should be	The plan will specifically refer to and follow the guidance within the Water Framework Directive and UKFS Guidelines and GBRs. CCF opportunities will be identified. Wetland habitats will be protected.

			identified and encouraged to mitigate against water run off. Identify areas of peat and propose measures for its future management to maintain and enhance this resource. The plan should identify measures to implement the FCS Guidelines on Water Management and protect water features, including wetland, flushes and springs.	
WoSAS	13/03/2018	19/04/2018	Unrecorded archaeology may be present under dense forest cover.	UKFS guidelines will be followed. Many of the recorded archaeological sites have been identified and forest design has taken the protection of the features and the setting into account. The proposed PAWS restoration will result in a lower intensity of ground prep which will help to safeguard any unrecorded features not evident above ground.
SNH	13/03/2018 & meeting with Steve Austin (30/05/20	01/06/2018	Inverawe: No issues for adjacent Golden Eagle SPA. Small area of Sitka Spruce remains to be felled in SSSI. 20m buffer around	The remaining Sitka Spruce in the SSSI at Inverawe will be removed when feasible. Consideration will be given

	18)		designated sites to reduce non native seeding into site. Glen Nant: No issues current management agreement working well. Regeneration beginning to become more widely established post deer fencing. Fearnoch: Priority is to protect designated sites with appropriate buffers, the restocking proposals in the current plan were considered sufficient. Natural regeneration of NBL in the buffer areas was considered preferable. Less competitive mixed conifers (SP/NS/DF) were considered appropriate within the main PAWS area within a matrix of NBL along the riparian zones. Local seed sources should be used wherever possible for planted NBL. Rhododendron should be considered in the plan and a Deer Management Plan should be included. The Hill at Deadh Choimhead (outwith the LMP	to felling to waste, should seeding from this remnant trees become an issue. The SNH approach on Fearnoch is in line with the current Forest Plan approach. After internal consultation it has been decided to greatly expand the NBL area within the North part of Fearnoch which should increase the resilience of the designated sites and provide a robust habitat linkage.

			area) offered fine views across the surrounding land and access improvements could be considered to facilitate access through the FE LMP area. The LMP should reference the possibility that the Tyndrum to Oban cycle route may potentially pass through Fearnoch.	
Internal Consultation: Advice note from Native Woodland Ecologist (see Appendix)		27/07/2018	Concentration of Atlantic Oakwoods and associated designated sites gives International significance to the conservation potential of the Fearnoch area. The Fearnoch block has potential to create resilient linkages between three key areas of designated Atlantic Oakwood, and the chances of successful PAWS restoration are greatly increased by the adjacent established Oakwoods. CCF has the potential to create a gradual transition, but with SS being a widespread element in the standing crop, it is likely that many CCF areas will regenerate with SS rather than the desired softer diverse conifer species.	Given the significance of the site, and the potential keystone role it can play in the protection and enhancement of the highly significant designated sites adjacent to it, then conversion of the full PAWS area and associated areas of non-PAWS woodland to NBL is proposed. Following an assessment of the likely silvicultural outcome from adopting CCF, a clearfell conversion process is proposed. The above approach has negative impacts on production and some biodiversity elements. To mitigate some of these issues it is

				proposed to create areas of targeted productive broadleaves within a matrix of non-intervention naturally regenerating NBL. This will also allow the past investment in road infrastructure to be spread over a productive element and will facilitate active management of the general woodland area to secure the restoration objective.
Internal Consultation Summary of Issues from meeting 01/02/2018			Important recreational areas around Car Parks particularly in Fearnoch, but wider core paths only moderately used. Field archery course now set up in new site. Potential access for Forestry owner to east of Inverawe under discussion. Access through Beinn Ghlas windfarm is taken through Fearnoch for large components. Spur roads needed in Fearnoch. TTMP operational in relation to access along the minor public road to Inverawe.	The internal consultation informed the development of the LMP.

			Deer Issues: Glen Nant fully fenced and deer controlled. Regen developing. Inverawe deer fenced and deer numbers under control. Fearnoch deer numbers too high to secure NBL establishment or softer conifers. Deer numbers potentially increasing to north of forest. Private water supplies noted and to be protected. PAWS restoration: see above. A number of butterfly and moth species occur across the site. Black Grouse occur in the surrounding areas but not within the LMP area. Potential for further archaeology to occur across the site. Productivity very high in Fearnoch with many areas well thinned.	
Scoping Drop in Session @ Taynuilt. 18/04/2018			Oban Times Article reported attendees comments: Create a nature trail suitable for	Potential enhancement to the existing recreational facilities raised by

			all abilities. Protect private water supplies. Improve signage on the path network. Attendees welcomed the chance to be consulted on the LMP and approved of the FE community minded approach. It was felt that the FE could do more to enhance access. Additional Comments: Continue the good road and track maintenance. Improve signage for walks. Consultation process welcomed. Keep site users updated on developments. Potential for toilet facilities. Glen Nant: consider options for NBL establishment, more diverse species? Lots of deer occur outside the Glen Nant block around the NE tip of the woodland. Request to work with owner of conifer block to SW of Inverawe block in terms of access and	consultees will be assessed. The ability of budgets to fund projects is an issue. Many of the suggestions are potentially low cost, but ongoing maintenance needs to be costed in. Water supplies will be identified & protected. Consult with neighbours on deer control. The shift from a mixed woodland to pure hardwoods will be a gradual process with limited impacts on the current generation of users.

			felling planning (Adjacency). Potential for CCF in mature hardwood section which is an outlier on the NW tip of Inverawe. Water supplies in Inverawe to Port Mine and other properties are very important and require consideration in plan and operations. Road access to Port Mine needs to be maintained and made more resilient. Fearnoch: Consider naming more roads with more signage as this can help people orientate themselves and is useful in identifying location in emergencies. Archaeology: clear sites and enhance setting. Fearnoch: More picnic tables at key viewpoints. Better path linkages with Glen Lonan. Add pedestrian gate at end of windfarm road. The diverse	

			conifer element was welcomed by many consultees, with pure broadleaved woodland considered to be less interesting visually and aesthetically. The fact that the woodland was a working productive woodland also added interest and was viewed as a positive. More areas for trail bikes. More leaflets and information boards in all forests.	

Appendix IV: Supplementary Information

Available for inspection at:

Forestry & Land Scotland
West Region
Whitegates
Lochgilphead
Argyll
PA31 8RS Tel: 01546 - 602518

Documentation includes:-

- Roadline surveys
- Production Forecast 2017
- Sub-compartment database
- Conservation plan
- Landscape Character Assessment by SNH
- Aerial photos
- Forestry Guidelines
- Recreation Plan
- Strategic Forest Design Plan
- Forestry Commission approval procedures
- Scheduled Ancient Monument Plans
- Inventory of Ancient, long-established and semi-natural woodland, Argyll & Bute District (NCCS)
- Economic felling ages
- Soil surveys
- Crop survey

Fearnoch PAWS and LMP revision

Advisory note from Native Woodland Ecologist
July 2018

Background

Donald McNeil asked me to provide advice on PAWS restoration in relation to the Land Management Plan revision. This is being undertaken by Ian Thomas. Confor are concerned about the loss of conifer timber productivity in Fearnoch due to PAWS restoration. John Taylor is visiting the site with Ian and the aim of these notes is to provide my desk based thoughts to inform this site visit.

Landscape setting

There is a concentration of Atlantic oakwoods around the south of Loch Etive that are of international significance and have consequently been designated as Special Areas of Conservation (see map one in accompanying document). This is an EU designation, underpinned by domestic legislation (the UK Habitats Regulation). Whilst Fearnoch is not designated itself, it is bordered by 3 sections of the Loch Etive Oakwoods SAC. This has three implications for our land holding – Firstly, it considerably increases the ecological potential of PAWS (see next section). Secondly, the PAWS area serves as a functional block to landscape scale connectivity and greatly hinders movement of species between the areas of ancient semi-natural woodland and thirdly, we should be taking steps to reduce the source of potential non-native regeneration into the SAC woodlands. The following section of the UK Habitats Regulation applies:

Assessment of implications for European sites and European offshore marine sites

105.—(1) Where a land use plan—

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of the site,

the plan-making authority for that plan must, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site's conservation objectives.

(2) The plan-making authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority specifies.

This implies that a buffer is required around the SAC woods to minimise seeding of Sitka spruce into the oakwoods.

Ecological Potential of PAWS in Fearnoch

Taken in isolation, the majority of Fearnoch PAWS have limited ancient woodland remnants (this improves around watercourses and other edges. However, as stated above, Fearnoch is situated at a key point in the Loch Etive woodland habitat network. There is great scope for colonisation of ancient woodland species from the adjacent woods. This moves the Ecological Potential from Low to Medium (I recommend revising the PAWS layer on this basis – see map 3).

Age class and species composition of planted Forest

The majority of the PAWS area has been planted with Sitka spruce between 1991 and 2000. Sitka was planted in some areas as recently as 2009. The small sections of PAWS in the south of the forest were mostly planted in the 1970's and 1980's (see maps 4 and 5).

Management

I understand from John that there is a good history of thinning in Fearnoch. This implies that there is scope for extending rotation length and managing some areas through LISS. This is a double edged sword for PAWS as ancient woodland communities have been shown to respond well to 'gradual restoration' under a well thinned canopy. However, the other edge of the sword is the need to repeatedly clear unwanted non-native regeneration. This is likely to be an ongoing issue in Fearnoch in any case as large areas of Sitka will persist beyond the PAWS boundary. Any areas of Sitka managed through LISS with the aim to restore to native woodland will ultimately need creation of large canopy gaps as native trees are generally very light demanding. Some under-planting with oak and hazel in large gaps may be necessary along with low deer pressure. Early interventions, well before terminal height would be required to avoid extensive windblow.

The area roughly encompassed by the red circle in map 6 has potential to be managed through LISS with the view to retaining an element on non-native conifers. This would be on the basis that Sitka, western hemlock , grand fir and western red cedar (all species with prolific natural regeneration) are removed at an early stage, favouring Norway spruce and Douglas fir - and European larch if it survives *Phytophthora ramorum* (there are some relatively old stands of these species in that locality). The old coupe plan suggests that this area was down for LISS previously. It may be possible to

manage suitable sections of the area indicated by the red circle to continue non-native conifers on this part of the PAWS for another rotation – under-planting Douglas fir for example where more invasive species have been felled. Within the area indicated by the red circle, any topographic feature that is likely to harbour ancient woodland remnants (e.g. burn-sides) should be opened up and converted to native woodland.

The other areas of PAWS where you could consider some element of non-native conifer (again of benign character such as DF or NS) are two polygons in the south with Low Ecological Potential.

Other than the areas indicated above, due to the strategic location of this forest within one of the richest oakwood habitats in the UK and indeed Europe, I strongly advise that we continue to pursue native woodland restoration on all other areas of PAWS.

Richard Thompson

25th July, 2018

Appendix VI

Forestry and Land Scotland | Coilltearachd agus Fearann Alba

WEST REGION LAND MANAGEMENT PLAN INFORMATION SHEET - DEER MANAGEMENT

LAND MANAGEMENT PLAN AREA: **Taynuilt**, this includes Fearnoch, Inverawe and Glen Nant forests.

INFORMATION SHEET COMPLETED BY: John Jackson

Population Trends	→
Damage impacts	→
Protection requirements	→
Impact On LMP delivery	

Part A

BACKGROUND INFORMATION

- **Species Information: Deer Species: Red and Roe Deer are the most common species, Sika are at low density there are no feral pigs or goats**
- **Population Numbers and recent trend: Fearnoch – med(reducing). Glen Nant – Low(stable). Inverawe – Low (stable)**
- **Density Breakdown: Fearnoch and Inverawe have more Red than Roe, Glen Nant will be closer to equal numbers.**
- **Annual Cull: Last two years cull –**
    1. **17/18 Fearnoch – 41 Roe, 86 Red. Inverawe – 5 Roe, 28 Red, 2 Sika. Glen Nant – 8 Roe, 14 Red.**
    2. **18/19 Fearnoch – 36 Roe, 43 Red. Inverawe - ? Roe, ? Red, Glen Nant – 18 Roe, 18 Red.**
- **Last Formal Survey/Results: Fearnoch 2013, soft conifer browsing damage range 11% - 26%**
- **Tree/Establishment Challenges in Previous Plan: Generally conifer has established successfully, Broadleaves have been more challenging with browsing impact too significant for successful establishment without additional resources.**
- **Deer Management Group Information, Membership and Update of Current Issues (Section 7's/8's……): Fearnoch and Glen Nant are not in a Deer Group, Inverawe is in Blackmount DMG**
- **Neighbouring Deer Density Pressures: High for all three forests.**
- **Current Challenges: Soft conifer and Broadleaves have required fencing for protection.**
- **General Comments:**

Appendix VI

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Part B

GENERAL PLAN REQUIREMENTS AND SCHEDULE:

(Targets in Plan Period with indication of timing, Year 1, Year 2….)

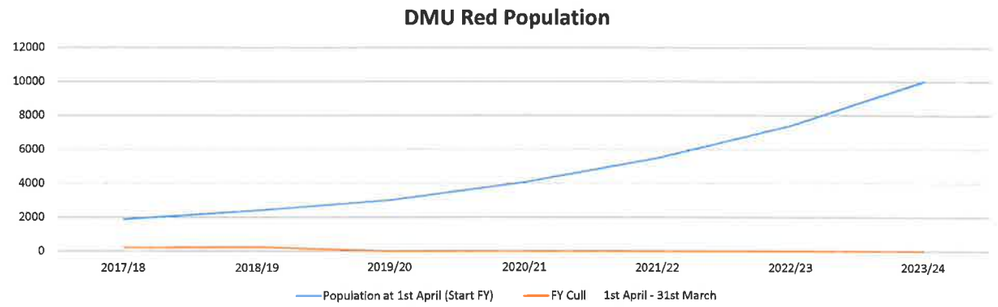
- **Deer Species: Red, Roe and Sika.**
- **Target Population: Low – under 10 per Sq Km**
- **Tree/Establishment Challenges in Plan Period: Soft conifer and Broadleaves may require fencing if planted at commercial spacing.**
- **Fencing: Inverawe and Glen Nant have recently become deer proof, Fearnoch will be moving to deer fencing within the plan period. *Fencing planned 2019/20***
- **Protection Methods (Direct/Contract/Lease…): Fearnoch Glen Nant will be Direct / Contract, Inverawe is Permission.**
- **Deer Management Protection Zones (Open Space/Glades/Corridors): Open space is crucial for controlling deer, regular maintenance will be required to maintain this.**
- **Indicative Access Requirements (ATV/ATC): Existing access to be maintained, future access required on restocks.**
- **General Comments: With improved deer fencing at Inverawe and Glen Nant, we should see deer density lower to a level which will allow natural regeneration of native woodland, for this to be achieved we must maintain deer proof fences.**
- **Neighbouring sporting commitments indicate deer density rising, Fearnoch is partially stock fenced, we are planning to replace this with deer fencing within the plan Period, this will be critical for stopping migration from our neighbours.**

Signed off by Wildlife Ranger Manager_____Date_____

Signed off by Delivery Manager_____Date_____

Red Deer Population Model (Mean EDU)

Financial Year (FY)	Population at 1st April (Start FY)	No per 100ha 1st April	Kid % of pop at 1st April	Recruitment	Immigration % of pop at 31st Aug	Immigration	Population 31st Aug	No per 100ha 31st Aug	Set % Cull	FY Cull 1st April - 31st March	% Cull achi	Population at 31st March (End FY)
2011	200	2.2	34	68	5	10	278	3.0			0	278
2018/19	278	3.0	34	95	5	14	386	4.2			0	386
2019/20	386	4.2	25	97	5	19	502	5.5			0	502
2020/21	502	5.5	29	146	5	25	673	7.3			0	673
2021/22	673	7.3	30	202	5	34	909	9.9			0	909
2022/23	909	9.9	36	327	5	45	1281	14.0			0	1281
2023/24	1281	14.0	26	333	5	64	1679	18.3			0	1679
2018/19	1679	18.3	33	554	5	84	2316	25.3			0	2316
2023/26	2316	25.3		0		0	2316	25.3			0	2316
2023/27	2316	25.3		0		0	2316	25.3			0	2316
2023/28	2316	25.3		0		0	2316	25.3			0	2316
2023/29	2316	25.3		0		0	2316	25.3			0	2316

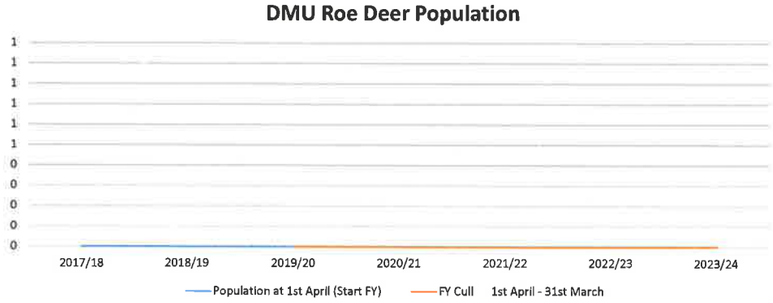


Mean Population (March 2017) = 1884

		17/18	18/19
Recruitment	H =	69	51
	C=	47	31
	Rec =	0.34	0.30
Cull	17/18 =	203	
	18/19 =	164	

Roe Population Model (Mean EDU)

Financial Year (FY)	Population at 1st April (Start FY)	No per 100ha 1st April	Kid % of pop at 1st April	Recruitment	Immigration % of pop at 31st Aug	Immigration	Population 31st Aug	No per 100ha 31st Aug	Set % Cull	FY Cull 1st April - 31st March	% Cull achi	Population at 31st March (End FY)
2011	200	2.2	30	60	10	20	280	5.9			0	280
2018/19	280	3.1	30	84	10	28	392	8.3			0	392
2019/20	392	4.3	30	118	10	39	549	11.6			0	549
2020/21	549	6.1	30	165	10	55	768	16.2			0	768
2021/22	768	8.5	30	230	10	77	1076	22.7			0	1076
2022/23	1076	11.9	30	323	10	108	1506	31.8			0	1506
2023/24	1506	16.7	30	452	10	151	2108	44.5			0	2108
2023/25	2108	23.4	30	632	10	211	2952	62.3			0	2952
2023/26	2952	32.7	30	885	10	295	4132	87.2			0	4132
2023/27	4132	45.8		0	10	413	4545	95.9			0	4545
2023/28	4545	50.4		0	10	455	5000	105.5			0	5000
2023/29	5000	55.4		0	10	500	5500	116.0			0	5500



Mean Population (March 2017) = 467

		17/18	18/19
Recruitment	D =	22	28
	K=	37	14
	Rec =	0.84	0.25
Cull	17/18 =	78	
	18/19 =	69	

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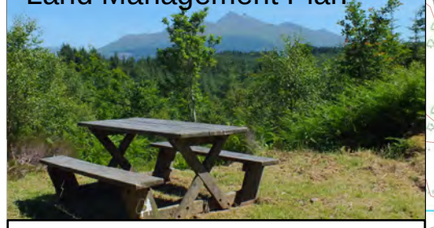
West Region

Taynuilt
Land Management Plan



DMP:
Proposed Deer Fencing
Fearnoch North

Legend

Type

- New Deer Fence 3014m
- Stock fence replaced by New Deer Fence 2132
- Renew Deer Fence 4695m
- Taynuilt Roads
- Taynuilt Plan Area
- Deer Grids x5

Broadleaves: Existing & Restock Areas

- MB: Mixed Broadleaves
- MB LTR: MB Long Term Retention
- NBL: Native Broadleaved
- NBL LTR: NBL Long Term Retention

N

Scale: 1:11,000 @ A3

01/11/2019

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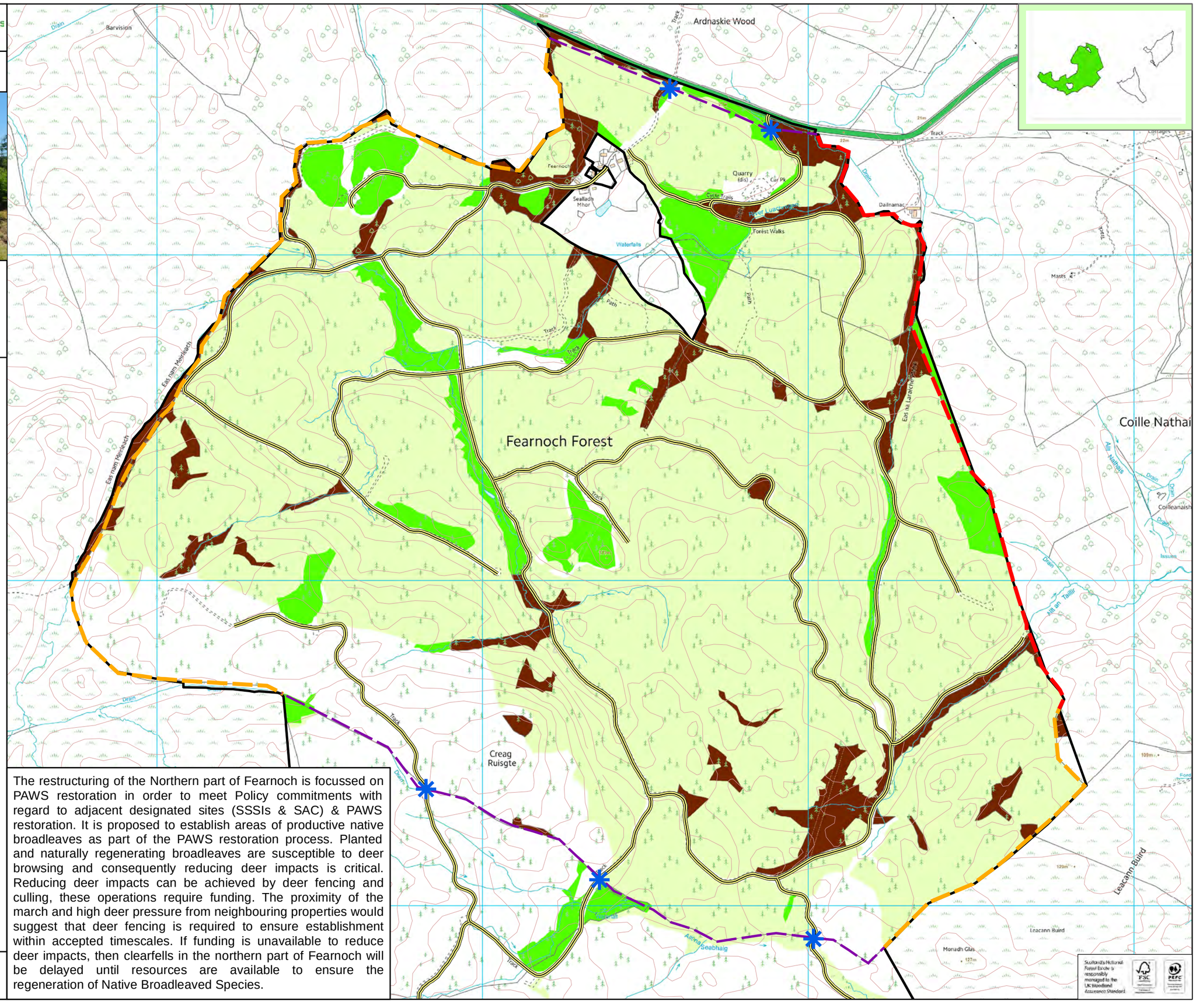

The restructuring of the Northern part of Fearnoch is focussed on PAWS restoration in order to meet Policy commitments with regard to adjacent designated sites (SSSIs & SAC) & PAWS restoration. It is proposed to establish areas of productive native broadleaves as part of the PAWS restoration process. Planted and naturally regenerating broadleaves are susceptible to deer browsing and consequently reducing deer impacts is critical. Reducing deer impacts can be achieved by deer fencing and culling, these operations require funding. The proximity of the march and high deer pressure from neighbouring properties would suggest that deer fencing is required to ensure establishment within accepted timescales. If funding is unavailable to reduce deer impacts, then clearfells in the northern part of Fearnoch will be delayed until resources are available to ensure the regeneration of Native Broadleaved Species.

Scotland's National Forest Estate is responsibly managed to the UK Woodland Assurance Standard.

Taynuilt Land Management Plan 2020 - 2029

Appendix VII: Planned Felling & Restock operations by Coupe in Phase 1 & 2

Table showing felling Coupes with breakdown of species and volume summary

Coupe No	Total Area Ha	SS Area Ha	L Area Ha	NS Area Ha	MC Area Ha	MB Area Ha	Volume	Restock Year	Comments
Phase 1 Felling 2020 - 2024									
1	**26.47**	**15.25**	**11.22**				**10788**	**2023**	
2	23.04	**21**	**2.04**				**8065**	**2023**	
3	**15.15**	10.01	4.82		0.32		5769	**2023**	
4	20.56	16.79	3.77				8686	**2023**	PAWS Restoration
5	**17.67**	**17.67**					**7951**	**2023**	**Fenceline Felling**
6	8.10	**5.81**	**1.07**		**1.22**		**2255**	**2023**	
7	**3.26**	**2.46**		**0.15**		**0.66**	**1155**	**2023**	
8	7.26	**4.86**			2.4		1816	**2023**	
9	**0.60**			0.35	0.25		179	**2023**	Invasive conifer removal
10	5.16	**0.35**		**4.81**			**1565**	**2023**	
11	**6.73**	**6.01**		**0.04**	**0.68**		2583	**2023**	
12	2.16	**1.77**			**0.39**		696	**2023**	Invasive conifer removal
13	**22.55**	**21.88**	0.2		**0.3**	0.18	5618	**2023**	PAWS Restoration
14	3.25	**3**			**0.26**		**1101**	**2023**	PAWS Restoration
15	**2.16**	**2.16**					**539**	**2023**	PAWS Restoration
16	18.68	**15.26**	**2.14**		**1.28**		**6026**	**2023**	PAWS Restoration
17	**1.21**	**0.06**	1.15				251	**2023**	PAWS Restoration
18	5.07	**5.07**					1773	**2023**	PAWS Restoration

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Coupe No	Total Area Ha	SS Area Ha	L Area Ha	NS Area Ha	MC Area Ha	MB Area Ha	Volume	Restock Year	Comments
19	**6.28**	**5.28**	**1.01**				**2413**	**2023**	
20	35.14	**27.68**	**2.84**		**4.62**		**13078**	**2023**	
Phase 2 Felling 2025 - 2029									
21	**50.81**	**47.4**	**3.41**				19982	**2028**	
22	12.52	**9.2**	**2.86**		**0.46**		3130	**2028**	PAWS Restoration
23	**11.80**	**6.33**		**2.04**	**3.42**		**4490**	**2028**	PAWS Restoration
24	6.03	**4.29**					**1506**	**2028**	PAWS Restoration
25	**4.02**	**4.02**					**1005**	**2028**	PAWS Restoration
26	2.83	**1.54**	1.29				642	**2028**	PAWS Restoration
27	**13.82**	**13.65**	0.17				6178	**2028**	PAWS Restoration
28	28.18	**27.45**	**0.73**				**12572**	**2028**	
29	**5.80**	**5.14**		**0.66**			**2511**	**2028**	
	366.30	**301.39**	**38.72**	**8.05**	**15.60**	**0.84**	**134325**		

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Table showing restocking post felling with breakdown by Coupe of restock species

Coupe No	Total Area Ha	SS Restock Ha	SP Restock Ha	NS Restock Ha	MC Restock Ha	NBL Restock Ha	DOG Created Ha	Restock Year	Restock Method	Comments
Restock for Phase 1 Felling 2020 - 2024										
1	**26.47**	**19.98**	**0.71**			**5.77**		**2023**	**Plant/Nat Regen**	
2	23.04	**4.52**			**9.33**	**8.66**	**0.54**	**2023**	**Plant/Nat Regen**	
3	**15.15**	3.96				9.85	1.34	**2023**	**Plant/Nat Regen**	
4	20.56	2.05			17.12	0.93	0.46	**2023**	**Plant/Nat Regen**	PAWS Restoration
5	**17.67**	**16.74**				**0.93**		**2023**	**Plant/Nat Regen**	**Fenceline Felling**
6	8.10	**0.78**				**6.24**	**1.08**	**2023**	**Plant/Nat Regen**	
7	**3.26**						**3.26**	**2023**		
8	7.26					7.26		**2023**	**Nat Regen**	
9	**0.60**					0.6		**2023**	**Nat Regen**	Invasive conifer removal
10	5.16					**5.16**		**2023**	**Nat Regen**	
11	**6.73**					6.73		**2023**	**Nat Regen**	
12	2.16					2.16		**2023**	**Nat Regen**	Invasive conifer removal
13	**22.55**					22.55		**2023**	**Nat Regen**	PAWS Restoration
14	3.25					**3.25**		**2023**	**Nat Regen**	PAWS Restoration
15	**2.16**					**2.16**		**2023**	**Nat Regen**	PAWS Restoration

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Coupe No	Total Area Ha	SS Restock Ha	SP Restock Ha	NS Restock Ha	MC Restock Ha	NBL Restock Ha	DOG Created Ha	Restock Year	Restock Method	Comments
16	18.68					**18.68**		**2023**	**Nat Regen**	PAWS Restoration
17	**1.21**					1.21		**2023**	**Nat Regen**	PAWS Restoration
18	5.07					5.07		**2023**	**Nat Regen**	PAWS Restoration
19	**6.28**	**4.83**				**1.46**		**2023**	**Plant/Nat Regen**	
20	35.14	**30.04**			**2.89**	**0.72**	**1.49**	**2023**	**Plant/Nat Regen**	
Restock for Phase 2 Felling 2025 - 2029										
21	**50.81**	**34.07**	**1.12**			5.48	10.13	**2028**	**Plant/Nat Regen**	
22	12.52					12.52		**2028**	**Nat Regen**	PAWS Restoration
23	**11.80**					**11.8**		**2028**	**Nat Regen**	PAWS Restoration
24	6.03					**6.03**		**2028**	**Nat Regen**	PAWS Restoration
25	**4.02**					**4.02**		**2028**	**Nat Regen**	PAWS Restoration
26	2.83					2.83		**2028**	**Nat Regen**	PAWS Restoration
27	**13.82**					13.82		**2028**	**Nat Regen**	PAWS Restoration
28	28.18	**6.12**			**18.82**	**2.48**	**0.76**	**2028**	**Plant/Nat Regen**	
29	**5.80**					**5.8**		**2028**	**Nat Regen**	
	366.30									

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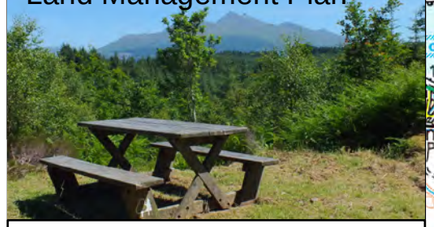

Appendix VII: Coupe Nos. Felling within first 10 years

Legend

- Coupe Boundary
- Phase 1: 2020 - 2024
- Phase 2: 2025 - 2029

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Scale: 1:40,000 @ A3

25/11/2019

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