Forestry and Land Scotland
Coilltearachd agus Fearann Alba

West Region - Beinn Ghuilean

Land Management Plan 2025-34

Application for Land Management Plan Approvals in Scotland – Forestry and Land Scotland – Property

Region:	**West**
Woodland or property name:	Beinn Ghuilean
Nearest town, village, or locality:	Campbeltown
OS Grid reference:	NR 720 184
Local Authority district/unitary Authority:	Argyll and Bute Council

Areas for approval (ha)	**Conifer**	**Native broadleaf**	**Non-native woodland**	**Mixed woodland**	**Open Space**	**Other Land**	**Peatland Restoration**
Clear felling	42.9[(1)]				11.3	0.2[(2)]	
Restocking (plant) [(3)]	18.7	16.9	4.2		5.4	69.1[(4)]	7.1
Restocking (natural regeneration)		6.2[(5)]			6.7		
Selective Fell (CCF)							
Thinning (Commercial)							
Thinning (Non-commercial)							

[(1)] All remaining conifers except those covered by SPHN notices.

[(2)] Represents existing broadleaved woodland not to be felled.

[3] includes land previously felled under previous LMP and felling permission, for which restocking approval had to be obtained through the new LMP. Includes areas felled or awaiting felling under SPHN's.

[4] See Table 2.5 for data analysis by coupe.

[5] Riparian woodland and edges (See Map 5.7)

1. I apply for Land Management Plan approval for the property described above and in the enclosed 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 FLS staff in 2022.
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 SF 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.
8. Conifers will be restocked to a minimum density of 2500/ha net plantable area. Broadleaves will be established through natural regeneration to achieve a minimum stocking of 1600/ha over a 5-to-10-year period, and 2500/ha if planted. Assessment of regeneration areas in this plan will be made at year 5, when a decision on what actions are needed to achieve full establishment if not achieved by year 5, with further review of sites with inadequate regeneration at year 7. Full establishment will be achieved by year 10, planting when necessary to supplement natural regeneration.

Signed: Donald McNeill
pp Regional Manager

Region: West

Date: 22/10/2024

Signed: C. Walker
pp Conservator

Conservancy: Perth and Argyll

Date of Approval: 06/11/2024

Date approval ends: 06/11/2034

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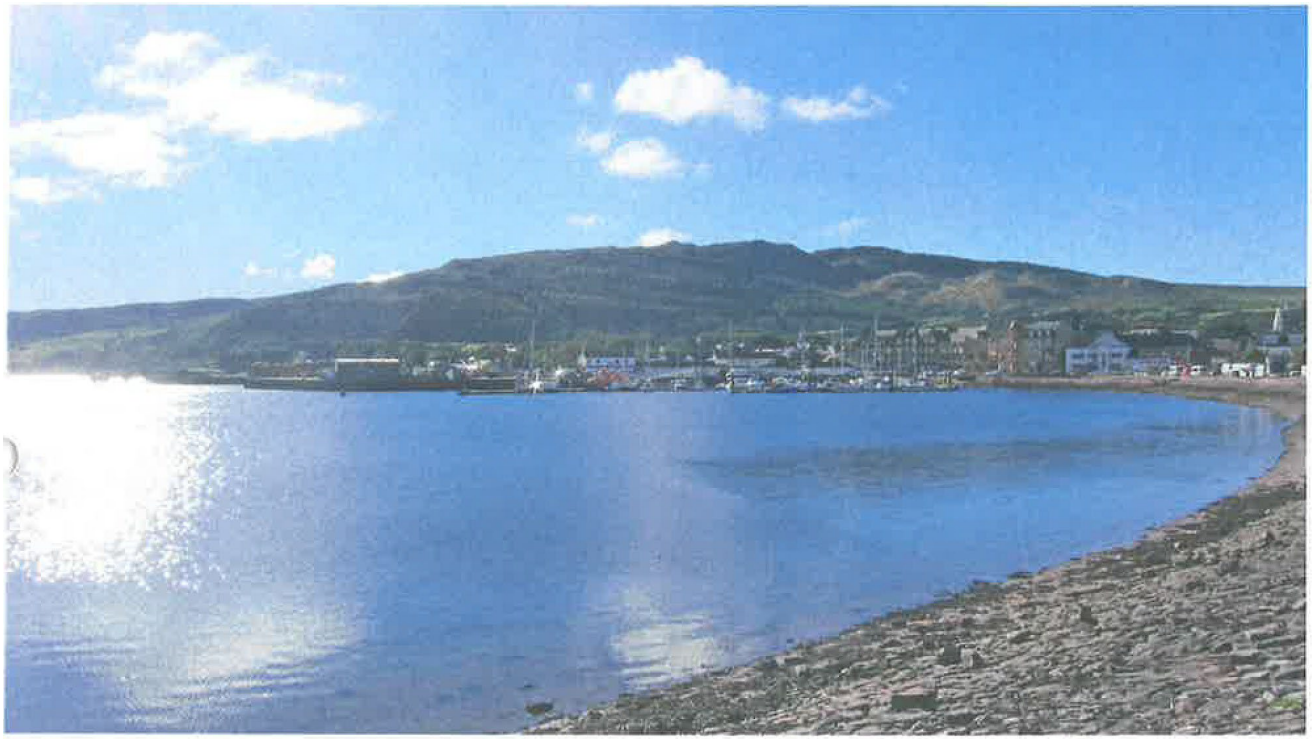
West Region - Beinn Ghuilean Land Management Plan



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

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

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Plan Reference No: LMP – 02 - 2024

Plan Approval Date: 06 – 11 - 2024

Plan Expiry Date: 06 – 11 - 2034

Forestry and Land Scotland
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1.0 Summary of proposals

1.1 Overview (See Appendix II for supporting information)

The plan for Beinn Ghuilean covers 144.0 ha. It is located just to the south of Campbeltown. The plan area also includes the Campbeltown office and deer larder in the Snipefield Industrial Estate. Much of the forest is conspicuous from the town and areas to the north. The forest area lies on the steep north facing slope of Beinn Ghuilean, rising from about forty meters above sea level to 340 meters. It is surrounded by agricultural land; on the west by Tomaig Glen and Black Loch, Beinn Ghuilean to the southeast, open agricultural land to the north, which contains Crosshill Loch reservoir close to the forest edge, and Glenramskill to the east. Glenramskill is also currently the subject of an afforestation proposal. Kilkerran Cemetery lies at the north-eastern corner. The forest was planted in 1979, mainly with Sitka spruce and larch, but with some Lodgepole pine and broadleaves. Planting in the upper areas has performed poorly. The form of the larch is generally poor. Only pedestrian and light vehicle access was available until 2016, when a forest road was built across Crosshill Farm. Crosshill Loch supplies water to two distilleries and to McFadyen's Yard, with much of its catchment being within the forest. There are associated watercourses, a network of ditches and pipes feeding into the reservoir (See Appendix II 3.4.2 and Appendix X).

In 2019, a Statutory Plant Health Notice (SPHN STH19-0280-0283) was issued for the felling of larch affected by *Phytophthora ramorum,* found in the north-western part of the forest. The larch was clearfelled at the start of 2020. Some additional areas of larch and productive conifers were also felled by plan amendment, whilst other poorer areas were earmarked for subsequent mulching. These poorer crops have, at the time of plan compilation, yet to be felled. Restocking approved under the felling amendment was to follow the approved Forest Design Plan, but with a note that this might be revised and approved under the new plan. A further infection was advised of in November 2021. This site is located near the entrance gate, below the forest road, along with larch above the Black Loch, previously included in the felling amendment. Felling was to be completed by 31st August 2022, but this target was not met and awaits felling. The SPHN area south of the road was felled, however, under the previous amendment. Again, additional spruce and larch was to be felled for completeness north of the road under a felling permission. This was not achieved before the felling permission expired on 21st February 2024, so the area had to be included within the new LMP going forward. A third SPHN was notified close to Knockbay Farmhouse on 19th January 2023. Part of this site lies on particularly steep ground above the cemetery, where winch working will be required. Again, there was a blocky spruce element embedded in the SPHN area, for which felling would be sought via the new LMP. Remaining larch

south of the road end is at substantial risk of infection (See Table 2.11 and Map 3.7 for SPHN areas and timeline).

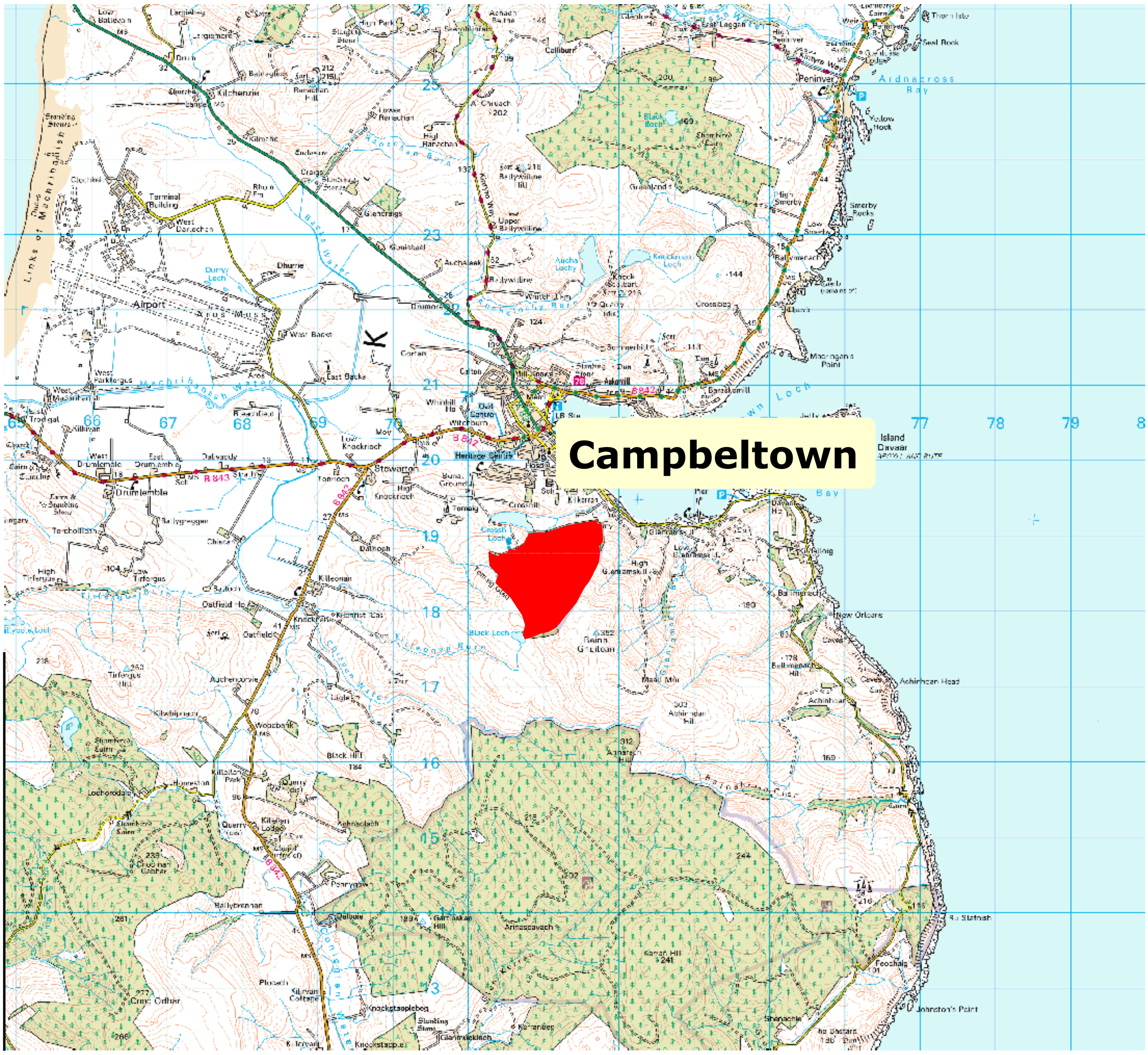
The original planting was designed by the Forestry Commission's landscape architect in 1978. A community survey in 2003 found mixed opinions about the afforestation (See Appendix II 3.7.3). A local community group looked at acquisition of the forest in 2016. Recreation is an important aspect of the forest, particularly with walkers and with a local mountain bike group who are keen to work with FLS to develop the track network. Access routes across private land have proved controversial at times, with informal access across the Crosshill Loch dam being deemed hazardous. The woodland falls within the Woodlands In and Around Towns (WIAT) scheme that can attract additional funding. The forest also falls within the Alliance for Scotland's Rainforest Zone, which may attract additional funding in the future. Community consultation in association with the current plan revision presented three scenarios for the future landuse of Beinn Ghuilean, with support for a mixed amenity woodland, rather than commercial forestry or complete woodland removal being preferred. However, access provision was deemed a higher priority.

The upper open parts of the forest are used by various birds including Black grouse. Much of the area is Blanket bog open habitat or soil types. Upper forest areas are currently planned for mulching with open habitat restoration in mind due to priority habitat types, including Upland heathland and deep peat, along with access difficulties and low crop value. Priority habitats link with those on neighboring ground, providing open habitat linkages, with opportunities to strengthen these. Intermediate open habitats between the forest and lower slopes tend to be steeper and bracken-dominated. Rhododendron is spreading into the forest from Glenramskill and the cemetery. This poses a concern, particularly after harvesting. Deer pose an issue to restocking with broadleaves and soft conifer species as shooting is problematic given public usage of the area. Deer fencing may prove difficult on some parts of the hill. Fencing also creates public access issues. The Land Registration process has also identified areas along the south-eastern march that are either outwith FLS ownership or fenced out. It is hoped that an excambion with Glenramskill will resolve some of these issues shortly. The adjoining land on the Glenramskill Estate was put forward as a New Woodland Creation Scheme in 2023, requiring reconsideration of the landscape design to mesh the two forest designs together. This scheme's approval is currently awaiting a final decision by Scottish Forestry.

1.2 Objectives

The primary objectives of the plan for the next 10 years, primarily from the design brief can be summarised as follows: -

1. Timber production – commercial conifer areas
2. Removal of all existing conifers within the next 5 years
3. Broadleaved/Scots pine woodland establishment on lower slopes
4. Protection of the private water supply – Crosshill Loch
5. Recreation enhancement
6. Landscape enhancement
7. Development of forest health resilience against tree diseases
8. Blanket bog/deep peat restoration
9. Open habitat network enhancement
10. Rhododendron control
11. To comply with UKWAS guidance for certification and UKFS



Map 1.1 **Location Map**

1.3 Summary of management proposals

The management of proposals in the 10-year plan period can be summarised as follows: -

Table 1.1 – Summary of operations requiring approval (2024 – 2033) or an EIA screening opinion (2024- 2029)

Operation	Description	Quantity
Felling	See map 5.3 and Table 2.5	42.9
Restocking	See map 5.6	46.0
Deforestation	See maps 5.8 & 5.9. Comprises 7.1 ha peatland restoration, 12.7 ha Upland heathland restoration and 10.9 ha of landscape enhancement (EIA Screening Opinion Request – see section 2.1.1)	30.7

2.0 Regulatory requirements

Scottish Forestry (SF) is responsible for approving felling and restocking operations on FLS land and ensuring that these operations are compliant with the UKFS. Thresholds for where approval must be sought are contained in an agreed Tolerance Table (section 2.10). Approvals are valid for the life of the plan (normally 10 years). SF maintains a Public Register online of all operations for which approval is being sought. The Beinn Ghuilean LMP contains felling and restocking requiring consent in the 10-year plan period.

2.1 EIA scoping enquiry request

2.1.1 Deforestation

Proposed Work – Deforestation EIA Scoping Request							
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		
Deforestation	X	30.7	100		Forest quarry		
Location of work		Beinn Ghuilean					
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.							

Landscape adjustments (within coupes 40008 and 40009) - Creating additional open space is proposed to be made in line with recommendations from the FLS Landscape Architect to adjust the upper planting line and eastern boundary edge, felling 10.9 ha of conifers. Smaller conifers are likely to be mulched. Conversely, a small area of existing open ground (2.0 ha) will be planted on the boundary with Glenramskill (handled as part of standard edge adjustments). Open habitat restoration (within coupes 40004, 40008, 40010 and 40012) - involves felling of 12.7 ha of conifers. Commercial conifers have already been felled. Remaining conifers will be mulched. Occasional drain blocking for Black grouse habitat improvement may also be implemented. Peatland restoration (within coupe 40008) - requires mulching of 7.1 ha of conifers. Subsequent peat damming of drainage channels and stump flipping is proposed. (See also Map 4.5).
Provide details on the existing land use and the environmental sensitivity of the area that is likely to be affected by the forestry project.
Landscape improvement areas - The larch areas (5.1 ha) are poor (YC 4 or less) and understocked (33%) with a proportion of unplanted steep rocky ground. Landscape sensitivity is high due to views from Campbeltown to the north. The area for deforestation falls within the Crosshill Loch catchment. Open habitat restoration areas - Conifers within the area are poor. Most of the area has shallow peat soils on slopes, so is not suitable for peatland restoration. Pockets of deep peat will occur within the area, but, based on peat depth analysis (See map 3.1) are unlikely to exceed 1 ha in total. The area is only visible to occasional walkers accessing the summit of Beinn Ghuilean. Part of the proposed deforestation area falls within the catchment of Crosshill Loch. The site adjoins existing Upland Heathland within the plan area and on neighboring land. Peatland restoration area - SS is currently achieving YC 8 and less, with patches of check and failure on wetter areas. Peat depths (See Map 3.1) on Scenario B and C soil types support restoration. Part of the proposed deforestation area falls within the catchment

of Crosshill Loch. The site lies between areas planned for open habitat restoration and existing open Upland Heathland and Blanket bog areas.

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.

(Use this form in consultation with the relevant appendices within the LMP, which include types of restoration methods, maps and site details).

Population and Human Impact – Positive outcomes noted below under landscaping. The Crosshill Loch reservoir catchment is partially within the area. UKFS guidelines will be followed in respect of operations, notably harvesting and peatland restoration within the catchment. Most of the peatland restoration area falls outside of the catchment. Peatland restoration techniques are not reported as causing any detriment to water quality. The informal trail to the summit of Beinn Ghuilean does not pass through the proposed area for peatland restoration.

Biodiversity – Positive impacts only, including benefits for open habitat bird species and priority habitats. Pre-operational checks will be undertaken to ensure measures are in place to protect species as per guidance.

Land use – Loss of woodland cover has a minor negative impact, but growth rates are poor and environmental impact of creating access and extracting material would also have a negative impact. ESC analysis suggest only Grey alder is suitable for the site, but would be challenging to establish in this location.

Soil - Peatland restoration will have a positive impact through carbon storage. Soil disturbance in the future will be reduced. Tree removal could increase sedimentation and erosion through increased water flows, but there may be benefits from reduced flow off peatland restoration areas where the peatland has an improved capacity for water retention and slower release of water.

Water - Some increase in flash flows of water might be expected as a result of tree removal. Tree removal within the catchment may increase water flows, but the scale of operations in the forest will meet the UKFS guideline of falling below the 20% catchment felling threshold. Climate – Carbon capture will be positively affected by peatland restoration as afforested peatlands may emit more greenhouse gases than the woodland itself can retain. Conversely, deforestation of non-peatland areas for landscaping will be carbon negative. Air – No impact. Material assets – No impact Cultural heritage – No impact. Pre-operational site checks will identify any additional features requiring protection. Landscape – Positive impact improving upper edges, view and open ground linkages
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.
Statutory stakeholders made aware of the proposal via LMP website and e-mail. Amenity woodland design proposals presented at community drop-in. See Appendix X for feedback from Forest Research on water quality. SEPA and RSPB have been consulted and have provided feedback (see consultation record Appendix 1). Guidance from FLS Peatland team on restoration of peatland. FLS Environment team commented on open habitat management.
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 effects anticipated.

Measures that will be taken to avoid any significant effects:

Site management will be carefully controlled as per Forest and Water and UKFS Guidelines which will be strictly adhered to, to protect the Crosshill Loch reservoir and Chiscan Water catchments. Water quality in reservoir feeder watercourses will be monitored closely. Tree removal within the catchment may increase water flows, but the scale of operations in the forest will meet the UKFS guideline of falling below the 20% catchment felling threshold.

The restoration of the peatland is in line with Scottish Government and FLS objectives. The peatland restoration operations will comply with UKFS guidance (in particular sections on Forests and Soils and Forests and Water) as well as the FCS document 'Deciding future management options for afforested deep peatland.' Other relevant guidance will be followed, including SEPA General Binding Rules, advice on reservoir catchment protection provided by Forest Research (set out in Appendix X) and precautions to protect drinking water and Scottish Water assets during forestry activities (set out in Appendix XI).

Standard mitigation will be put in place for the felling and restoration works, including silt, traffic and noise management via a Forestry Environmental Management Plan (FEMP) produced by the Forestry Contractor.

Prior to operations commencing the FLS Environment team will assess the sites for protected breeding species and for heritage features. They will provide guidance which must be followed by FLS staff and contractors. These measures may include: restricting the timing of operations and stipulating protective buffer zones.

Trails will be kept clear of harvesting debris and public access managed, following SOAC guidance for land managers.

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
Deep peat area	>9.0 ha

Property Details			
Property Name:	Beinn Ghuilean		
Business Reference Number:		Main Location Code:	501
Grid Reference: (e.g., NH 234 567)	NR 722 185	Nearest town or locality:	Campbeltown
Local Authority:	Argyll and Bute Council		
Owner's Details			
Title:	Mr	Forename:	Roger
Surname:	Wilson		
Organisation:	FLS	Position:	Planning Forester
Primary Contact Number:	07776171413	Alternative Contact Number:	
Email:	roger.wilson@forestryandland.gov.scot		
Address:	West Region, Whitegates, Lochgilphead, Argyll		
Postcode:	PA31 8RS	Country:	UK
Is this the correspondence address?		Yes	
Office Use Only			
GLS Ref number:			

2.2 Summary Management Proposal Tables

Table 2.1 Clearfelling in the first 20 years of the plan

Felling	Phase 1	Phase 2	Phase 3	Phase 4
Area in ha	42.9	-	-	-
% of area (wooded) (not including other land)	94	-	-	-
Volume (K m^3)	15.6	-	-	-

Table 2.2 Species composition over the first 20 years of the plan

Species Group	2020*		2034		2044	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
Sitka Spruce	33.2	33	-	-		
Norway Spruce	0.1	-	-	-		
Larches	33.0	33	-	-		
Pines	7.8	8	18.4	17	18.4	30
Mixed conifers	-	-	0.3	-	0.3	-
Mixed Broadleaves	0.4	-	6.0	6	6.0	10
Native Broadleaves	2.4	2	24.1	23	24.1	40
Felled/failed	5.3	5	-	-	-	-
Internal Open Space	18.8	19	12.1	11	12.1	20

Species Group	2020*		2034		2044	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
Other open space (including deforestation)	-	-	46.0	43	-	-
Total	**101.1**	**100**	**106.9**	**100**	**60.9**	**100**
Open Hill	37.1		37.1		76.0	
Lost/Extra land (open areas)	3.7		-		-	
Extra land (wooded)	2.1		-		-	
Bog restoration	-		-		7.1	
Total	**144.0**		**144.0**		**144.0**	

See Section 4.2 and Table 4.5 for more details and caveats.

- Comparative baseline figures prior to any felling.

Table 2.3 Age class composition over the first twenty years

Age Class	2020		2034		2044	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
0 – 10 yrs	-	-	46.0*	94	-	-
11 – 20 yrs	-	-	-	-	46.0	94
21 – 40 yrs	-	-	-	-	-	-
40 – 60 yrs	82.2***	100	2.8**	6	-	-
60+ yrs	-	-	-	-	2.8	6
Total	**82.2**	**100**	**48.8**	**100**	**48.8**	**100**

See also Chart 4.1 Future Forest Structure

*Represents area to be restocked.

** Existing native woodland

***Existing woodland and failed (scattered edge woodland) (See Table 2.2)

2.3 Detailed Summary Tables

Table 2.4 Clearfelling Phase 1 (See Map 5.3) (Excludes SPHN coupes)

Clearfelling (Phase 1)												
Coupe No	**Total Area (Ha)**	**Volume (K m3)**	**Spp by Ha (SS)**	**Spp by Ha (SP)**	**Spp by Ha (LP)**	**Spp by Ha (NS)**	**Spp by Ha (Larch)**	**Spp by Ha (X Con)**	**Spp by Ha (B/L)**	**Open Land by (Ha)**	**Restock Year**	**Monitoring Comments**
40008	18.8	3.5	10.1		7.0					1.7	n/a	Mulch
40009	33.4	12.1	19.7		0.7	0.1	3.6	0.1	0.2**	9.1	2027	
40010	2.2	0.4	1.3		0.2		0.1			0.6	n/a	Mulch, post completion of excambion
Totals	**54.4**	**16.0**	**31.1***		**7.9***	**0.1***	**3.7***	**0.1***	**0.2****	**11.3**		*42.9 ha net felling area

**B/L (broadleaves) not to be felled

Table 2.5 Restocking (See Map 5.6) (Includes restocking of SPHN coupes, felled or awaiting felling)

Restocking													
Coupe No	**Total Area (Ha)**	**SS (Ha)**	**SP (Ha)**	**LP* (Ha)**	**NS (Ha)**	**DF (Ha)**	**XC (Ha)**	**B/L (Ha)**	**EXISTING B/L (Ha)**	**Open (Ha)**	**Restock Year**	**Restock Method & Density**	**Monitoring Comments**
40003	6.9		1.8					2.6		2.5		Plant 2500/ha 2.4 ha of MB is by nat. regen	Regen. Is only 50% stocking for amenity around trails
40004	21.9		7.6					7.5		6.8		Plant 2500/ha	3 ha to priority

Restocking													
Coupe No	**Total Area (Ha)**	**SS (Ha)**	**SP (Ha)**	**LP* (Ha)**	**NS (Ha)**	**DF (Ha)**	**XC (Ha)**	**B/L (Ha)**	**EXISTING B/L (Ha)**	**Open (Ha)**	**Restock Year**	**Restock Method & Density**	**Monitoring Comments**
												1.2 ha of MB is by nat. regen	habitat restoration
40005	10.4		1.4				0.1	5.5		3.4	2027	Plant 2500/ha 1.4 ha of MB is by nat. regen	Regen. Is only 50% stocking for amenity around trails
40008	18.9		0.9					0.8		17.2	2027	Plant 2500/ha	Mainly peatland & priority habitat restoration
40009	33.4		6.4					8.7	0.2	18.1	2027	Plant 2500/ha 2.2 ha of MB is by nat. regen.	Regen. Is only 50% stocking for amenity around trails.
Totals	**91.5**		**18.1**				**0.1**	**25.1**	**0.2**	**48.0**			
%	**100**		**20**				**-**	**28**	**-**	**52**			
Coupe due to be felled (mulched) and not restocked, post completion of excambion													
40010	2.2									2.2	n/a		Priority habitat restoration
Total	**2.2**									**2.2**			

Restocking													
Coupe No	**Total Area (Ha)**	**SS (Ha)**	**SP (Ha)**	**LP* (Ha)**	**NS (Ha)**	**DF (Ha)**	**XC (Ha)**	**B/L (Ha)**	**EXISTING B/L (Ha)**	**Open (Ha)**	**Restock Year**	**Restock Method & Density**	**Monitoring Comments**
Edge adjustments onto existing open land													
40006	2.1		0.2				0.2	1.4		0.3	2027	Lower stocking due to ground conditions	Control rhodo-dendron
40002	38.5		0.1					0.8		37.6	2027	Plant 2500/ha 0.5 ha of MB is by nat. regen	Open hill
Totals	**40.6**		**0.3**				**0.2**	**2.2**		**37.9**			
Grand totals	**134.3**		**18.4 ***				**0.3***	**27.3 ***	**0.2**	**88.1**			*46.0 ha net restocking

Broadleaved and mixed woodland will be established through planting to achieve a minimum stocking of 2500/ha.

Table 2.6 Civil Engineering projects requiring EIA determinations (See sections 2.1 and 4.9.2)

Proposed Activity (Road/Quarry)	OS Grid Reference	Forest/Coupe	Description (Length/Area/ Construction)	Area to be felled (ha)	Monitoring Comments
n/a					

2.4 Tree felling in exceptional circumstances

FLS will normally seek to map and identify all planned tree felling in advance through the LMP process. However, there are some circumstances requiring small scale tree felling where this may not be possible and where it may be impractical to apply for a separate felling permission due to the risks or impacts in delaying the felling. Felling permission is therefore sought for the LMP approval period to cover the following circumstances: -

- Individual trees, rows of trees or small groups of trees that are impacting on important infrastructure (as defined below*), either because they are now encroaching on or have been destabilised or made unsafe by wind, physical damage or impeded drainage.

Table 2.7 Other Felling

Other Felling				
Date	**Coupe/Area**	**OS NGR**	**Volume**	**Comments**

* Infrastructure includes forest roads, footpaths, access (Vehicle, cycle, horse walking) routes, buildings, utilities, services and drains.

The maximum volume of felling in exceptional circumstances covered by this approval is **75** Cubic meters per Land Management Plan per calendar year. A record of the volume felled in this way is detailed above and will be considered during the five-year Land Management Plan review.

2.5 Other projects

Table 2.8 Other Projects

Regional Team	Activity	Area/Location	Indicative Date
Environment	Species Monitoring & Surveying.	Whole forest.	2025 - 2034
Recreation and Tourism	Maintenance of existing trails; management of public access to operational sites.	Forest walks, trails.	2025 - 2034

Regional Team	Activity	Area/Location	Indicative Date
Deer Management	Deer Culling as per the DMP to meet target densities to permit successful establishment of vulnerable crops – see Appendix VII.	Whole forest.	2025 - 2034
	Fence Maintenance as required.	External fences.	2025 - 2034
Civil Engineering	Prior Notification for new tracks associated with recreation developments.	Lower areas.	As required.
	Roads maintenance as required.	Forest road.	As required.
Plant Health	None foreseen at present.		If required.
Planning	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 and 5.	As required.

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

2.6 Departure from UKFS guidelines

None present.

2.7 Standards and guidance on which this LMP is based

This land management plan has been produced in accordance with a range of government and industry standards and guidance as well as recent research outputs. A full list of these standards and guidance can be found here: Link to management documents
Other relevant external policies and documents are listed in Appendix II Section 3.10

2.8 Summary of additional regulations

Any future track requirements will need local authority Prior Notification (PN) approval. These will be submitted following EIA screening approval by Perth and Argyll Conservancy. The plan does not itself contain proposals for any new tracks.

2.9 UKWAS requirements

Table 2.9 UKWAS summary

Description	% of LMP Area[1]	Location of Data
Restock main conifer spp	-	Forester Restock Layer
Restock other conifer/non-native broadleaves	16	Forester Restock Layer
Open Space[2]	67	Forester Restock Layer
Native broadleaves[3]	17	Forester Restock Layer
Management for biodiversity as primary objective (incl NR and MI area)	53[4]	Forester Management Layer
LISS	3[5]	Forester Management Layer
Natural reserves	0	Forester Management Layer

Notes: 1. The % will total more than 100% as the species and management categories overlap.

2. Only the larger areas of open space area recorded here. There many more small areas of open space within the broadleaf woodland.

3. The native broadleaves will be at variable stocking densities.

4. Open hill area – priority habitat restoration and peatland restoration.

5. Will rise after restocking to 34%.

2.10 Conservancy approval thresholds

Table 2.10 Tolerance table

	Adjustment to felling coupe boundaries	Timing of restocking	Changes to species	Changes to road lines	Designed Open Ground	Wind blow clearance
Scottish Forestry Approval not normally required (record and notify SF)	10% of coupe size	Up to 5 planting seasons after felling (allowing for fallow periods for Hylobius)	Change within species group e.g., Native broadleaves Non-native conifers e.g., Sitka spruce to Douglas fir Non-native to native species (allowing for changes to facilitate Ancient Woodland policy) For Caledonian pine woodland – SP to native BL to allow for disease issues	Departures of up to 60 m from the center of the roadline	Increase by up to 5% of coupe area	
Approval by exchange of emails and maps	10-15% of coupe size	5 years +	Change of coupe objective likely to be consistent with current policy e.g., from productive to open, open to native species	Departures of greater than 60 m from the center of the roadline	Increase between 5-10% coupe area. Any reduction in open ground within coupe area	Up to 5 ha
Approval by formal plan amendment may be required	> 15% of coupe size		Major change of objective likely to be contrary to policy e.g., native to non-native species, open to non-native	As above, depending on sensitivity	Increase >10% of coupe area	More than 5 ha

2.11 Summary timeline and approvals for the plan area

Date	Area (ha)	Comments
31/07/2017	144.0	Previous plan expired, subsequently extended.
28/08/2019	10.47	STH19-0280-0283, for completion by 30/09/2020. Complete.
15/11/2019	30.0	Additional felling to accompany STH19-0280-0283, including 5.0 ha of larch. Incomplete. Restocking to be approved through new LMP.
11/11/2021	17.59	STH21-0733-0734, for completion by 31/08/2022. Incomplete.
10/01/2022	2.42	Additional felling to accompany STH21-0733-0734, including 0.24 ha of larch. No started. Permission has expired.
31/01/2022	144.0	Plan extension expired.
19/01/2023	15.93	STH22-0875, for completion by 31/08/2026. No started.

3.0 LMP Analysis

3.1 Previous plan (see also Appendix II/2.0)

The previous plan for Beinn Ghuilean Forest was approved on 31/01/2007 and expired on 31/01/2017. It was subsequently extended until 31/01/2022. Management prescriptions focused on converting the forest to LISS, with thinning of lower slopes, on Phase 2 felling of Sitka spruce showing signs of windblow to the east; on edge modifications in phases 3 and 4; and on poorer crops managed as permanent retentions. These proposals had to be abandoned, due in part to the arrival of *Phytophthora ramorum* in 2019. However, susceptibility to wind damage, access issues and poor crop form had already resulted in the LISS proposals not progressing as thinning was considered unrealistic. This was additionally hampered by the delay in building the forest road; consent to build only being sought and granted in the second half of 2015. The proposed Phase 2 coupe was also too small for economic working.

Recreation trails have been maintained. However, numerous new informal mountain bike trails have been created by a local group in the lower part of the forest. The group also wish to make a formal agreement for the future management and development of mountain biking routes in the forest. Some conflict with walkers has been noted, however. Proposals to build a network of tracks for timber extraction have so far resulted in only one built to the north-east corner; with the added intention being that they might contribute to an extended set of trails in the forest in the future. However, no further harvesting tracks are currently envisaged.

An area for new planting on the eastern side of the forest has not been planted; it being more practical to tie in operations with the restocking of the adjoining Phase 2 coupe. Consequently, proposed edge improvements have not been realised. This proposal has been revised in the new plan to take account of the Glenramskill New Woodland Creation scheme.

3.2 Key challenges

3.2.1 Timber production – commercial conifer areas

Beinn Ghuilean was within the Rapid Response Zone as described in the June 2021' *Phytophthora ramorum* on larch Action Plan', which required prompt action to fell infected trees following the issuing of an SPHN (Statutory Plant Health Notice) in 2019. Two further SPHN's have subsequently been issued (See Map 3.7) and more are likely until all larch is felled. Any remaining standing mature timber will be vulnerable to windblow due to increased exposure resulting from felling all the larch. These areas would also become less accessible and create potential landscape issues. Felling amendments to remove non-larch components associated with the SPHN areas were approved by Scottish Forestry but have since expired before completion.

Areas of poor growth may not be economical to harvest. Larch form is fair to poor, affecting marketing and timber value. There are constraints on access for harvesting, including to upper areas; working within the reservoir water supply catchment with drains, pipes, and stream gullies; around recreation facilities and users; and on steep ground. Operations may also be constrained by the need for sensitivity when funerals are taking place in the cemetery. Areas of steep ground will require winch working.

A Timber Traffic Management Plan is in place (See Appendix VIII) for the minor public road maintained by the Council, which imposes restrictions on timber traffic. This constrains haulage from the forest unless mitigation measures are agreed with Argyll & Bute Council, such as limited road improvements.

3.2.2 Broadleaved/Scots pine woodland establishment on lower slopes

The main challenge to establishment is deer control. Deer movement will be affected by the deer fencing of Glenramskill new planting scheme. Felling will remove some cover for deer, but most are thought to reside in neighbouring farmland thicket. Shooting is difficult due to public use of the area and proximity of residential properties. Deer fencing is likely to be necessary but is costly. It may not be feasible in certain areas and there may be public access issues where fences cross existing trails. Construction of tracks for ranger access is desirable, but conflicts arise when such tracks then become access routes used by the public, channeling them into areas the rangers wish to shoot in. (See Beinn Ghuilean Deer Management Plan Appendix VII).

3.2.3 Protection of the private water supply – Crosshill Loch (See also Appendix X).

Working methods within the private water catchment are particularly sensitive. The main challenges relate to sedimentation and run-off into the reservoir/loch. There is a network of drains and pipes feeding water into the main tributaries, expanding the catchment area. Some of the water pipes do not appear well mapped. The functionality of some these features is also questionable. The catchment area is adjudged to be 159 ha. Under UKFS, no more than 20% of a catchment may be felled in any 3-year period. 37.2 ha were felled under the 2019/20 SPHN and felling permission, which amounted to 23%. An additional 7.3 ha will be felled under the 2021 SPHN and felling permission, currently now proposed for autumn 2024, which will achieve a three-year separation from the first SPHN felling. The SPHN of 19/01/2023 adds a further 4.0 ha to felling within the catchment. Removal of all the remaining conifers would add a further 18.4 ha, giving a total of 18.7% of the catchment to fell in 2024. To date, no issues have been reported with the quality of the water in Crosshill Loch.

3.2.4 Recreation enhancement

Recreation trails will be impacted by felling under the SPHN's and with further larch and mature conifer removal. Tree removal around bike trails and intersections between paths is desirable for sightlines and lighting, but the presence of trees is also desirable for amenity. Tree removal may cause increased surface water on paths. The local mountain biking group hope to enter into some form of partnership with FLS, to allow them to develop and maintain trails, which will need to be accommodated alongside other forest users. Access from Narrowfield crosses farmland, with cattle grids, gates and livestock.

3.2.5 Landscape enhancement – External views and visitor zones

The landscape is sensitive from key viewpoints. Timing and scale of felling is being driven by SPHN's. Removal of larch on its own can create awkward shapes in the landscape. Larch adds to the aesthetic appearance of the forest, but retention is not sustainable now given the arrival of *Phytophthora ramorum*. Felling all mature trees and starting reafforestation from a blank slate will have a potential negative impact on woodland restructuring and may not be appreciated by some of the community; whilst starting from a blank slate creates new opportunities to develop a more community and landscape friendly future forest with greater resilience. Maintenance of a tree-free area above the new upper planting line, including avoidance of trees reappearing on the skyline, will be needed to sustain the landscape enhancements.

3.2.6 Development of forest health resilience measures against tree diseases

This will be achieved though removal of vulnerable tree species and control of rhododendron, which can act as a host for *Phytophthora*. However, some of the poorer crops will need to be mulched or felled to waste. Access to these areas can also be challenging.

3.2.7 Peatland restoration

Deep peat is present in the upper areas (See Map 3.1). Restoration will require mulching of conifers, which will be expensive. Access to these areas is difficult. All areas may be vulnerable to unwanted conifer regeneration in the future.

3.2.8 Open habitat network enhancement

Open habitat network linkages are currently broken up by conifers in the upper areas. These will need to be removed and the associated open area kept free of conifer regeneration. Limited growth of low broadleaved species may be beneficial for Black grouse. Current access for forest management purposes is also difficult.

3.2.9 Rhododendron control

Dense rhododendron is present on adjoining land and within the cemetery. Seeding is likely to continue, which will impact on the plan area. Rhododendron is present on FLS land above the cemetery. Finances are limited to deal with this and would ideally require the adjoining landowner to tackle the large area of dense, mature rhododendron on their property at the same time. Local residents have also expressed a desire to keep the rhododendron on the Glenramskill Estate when consulted on the New Woodland Creation scheme.

3.3 Plan objectives

3.3.1 Timber production – commercial conifer areas

Following the felling of the remaining commercial conifers in 2024, no commercial timber production is envisaged in the forest in the future. The forest will be managed under LISS, with thinning for amenity and safety reasons when necessary.

3.3.2 Broadleaved/Scots pine woodland establishment on lower slopes

The lower slopes will be restocked with suitable broadleaved species and Scots pine. Mixes will vary according to site. The upper planting boundary will be as per the landscape architect's design. Some non-native broadleaved species will be planted, such as sycamore given its hardiness in coastal environments, and beech on the eastern edge to counter the spread of rhododendron. Deer fencing options are still to be finalised but may include creation of enclosures and possibly converting the northern stock fence to a deer fence with access gates.

3.3.3 Protection of the private water supply – Crosshill Loch

Open riparian areas will be enhanced with native woodland planting. The total wooded area within the catchment will be reduced slightly, but the future forest type will be managed under LISS, requiring only small-scale interventions when thinning or enhancing recreation routes. This will help protect forest soils from erosion. Re-establishing woodland will help reduce run-off and reduce spate events.

3.3.4 Recreation enhancement

FLS will work with community groups, including the local mountain bike group, to ensure a safe and user-friendly network of trails is developed. Forest redesign will diversify the woodland environment; create additional open space, along trails, at Welcome Zones and viewpoints; and build a more resilient forest for the future.

3.3.5 Landscape enhancement

Landscape enhancement will be delivered through lowering of the upper planting line to match the landform, species diversification and increase in internal open space associated with recreation routes. Use of broadleaves will provide seasonal colour changes. Species diversification will provide textural variety. The area of open land between Glenramskill and the landscape architect's design will be planted up as far as practical to avoid a straight edge developing between the two schemes. This is treated as an edge enhancement rather than new planting. Conifers on the skyline will be removed by mulching or felling and not replanted.

3.3.6 Development of forest health resilience measures against tree diseases

National policy is to avoid planting disease-prone species and to target removal of susceptible species where possible. The plan therefore reflects these policies and aims to diversify the tree species to improve forest resilience. Larch and ash will not be planted in the next rotation. There are no current plans to sell ash infected with *Chalara fraxinea.* However, it is thought that natural senescence will contribute positively to deadwood volumes, so removal is unlikely, allowing diverse natural regeneration to fill gaps in what are generally pure ash stands.

3.3.7 Blanket bog/deep peat restoration

Deep peat restoration is a national policy, as outlined in the document; 'Deciding future management options for afforested deep peatland', and also in the Scottish National Peatland Plan Scottish National Peatland Plan . The aim is carbon storage and future carbon capture. Opportunities for deep peat restoration have been identified and funding is available. Areas of deep peat are present mostly in the upper area. Restoration areas are shown on Maps 4.5.

3.3.8 Open habitat network enhancement

Conifer regeneration will be removed from upper areas periodically, to maintain open linkages within the plan area and with external open ground.

3.3.9 Rhododendron control

Eradication of rhododendron on FLS is a long-term goal. Planting of beech adjacent to the external areas of rhododendron infestation will help prevent the spread of rhododendron into the forest. Standard rhododendron control measures may otherwise be employed to deal with bushes currently on FLS land or those that arise in the future.

3.3.10 To comply with UKWAS guidance for certification and UKFS

The certification standard is designed to reflect the requirements set out in the governmental UK Forestry Standard and thereby the General Guidelines adopted by European Forestry Ministers at Helsinki in 1993, the Pan-European Operational Level Guidelines subsequently adopted at Lisbon in 1998 and other relevant international agreements. The certification standard is also designed to reflect the requirements of the two leading global forest certification schemes – the Forest Stewardship Council and Programme for the Endorsement of Forest Certification. Products certified through these schemes are in much demand in the UK and global timber market as they provide a widely recognised way to inform customers that timber products come from responsibly managed sources. West Region aims to manage its forests for certification in accordance with these standards.

Table 3.1 Summary of Opportunities, Issues and Constraints against Plan Objectives with resultant Concept over the next 10 years (See maps 4.2 and 4.3)

Objective	Opportunities	Issues and Constraints	Concept
1 - Timber production - Future forest design	• Sitka spruce grows well on lower areas. • Potential for minor conifer species on lower areas • Some areas could be thinned in the next rotation. • Increase species diversity for resilience against climate change and environmental reasons.	• Achieving sustainable timber production will be difficult in a forest of relatively small size. • Tree health issues limit species choice and affect harvesting priorities. • Exposure, thin soils and peat limit opportunities for woodland in the upper areas • Thinning is only possible in lower areas due to exposure higher up. • Future species choices will reduce timber revenues and markets • Water sensitivities associated with the reservoir • The Timber Traffic Management Plan on Tomaig Road imposes constraints on timber traffic and lorries/low loader, permissible haulage only between April and September; and estimated 25 K m^3 per annum.	• Manage the future forest for community aspirations and amenity emphasis, without any commercial aspirations.
2 – Broadleaved/ Scots pine establishment on lower slopes	• Opportunity to develop a more resilient and amenity focused woodland.	• Establishment will face challenges form deer. Soils are shallow in places. Deer fencing is expensive.	• Establish broadleaved/Scots pine woodland on the lower slopes. • Choose species that are suited to the site

Objective	Opportunities	Issues and Constraints	Concept
		Establishment costs will be higher. • Water sensitivities associated with the reservoir will restrict some types of management operation, such as cultivation and drainage	and free from current plant health issues.
3 – Protection of the Crosshill Loch reservoir water supply	• Opportunity to create resilient buffers along the side feeder watercourses. • Future LISS management will help dissipate run-off, reducing flashing flooding and erosion. Less ground disturbance from management methods will reduce water pollution. Conifer removal will also reduce acidification.	• Felling of more than 20% of the catchment in any 3-year period will require a Site Impact Assessment. • Some loss of canopy cover could increase spates, run-off and erosion.	• Felling not to exceed 20% of the catchment in any 3-year period. • Water guidelines to be adhered to in order to prevent pollution through run-off or through any existing drainage channels, and woody materials not to enter the reservoir.
4 – Recreation enhancement	• Existing trails will benefit from increased future woodland diversity and more open space. New viewpoints will emerge through former woodland removal. • Sightlines on bike trails will be	Reduction in woodland cover • Any new developments will cost money to create and maintain. • Access over private farmland with livestock is an issue for walkers. Cattle grids and gates also hinder access. • Unofficial access routes to the forest have	• Open vistas to be established at Welcome Zones • Increased open space to be provided along trails. • New viewpoints to be identified and kept open. • Continue to work with the local bike club over trail

Objective	Opportunities	Issues and Constraints	Concept
	improved through increased open space along the trails and at path intersections. • Open space can be created to enhance Welcome Zones • Opportunity to work with local bike club to develop and integrate a manageable trail infrastructure. • Potential to realign Knockbay access beside cemetery wall.	issues, such as over the weir. • New areas of open space will need to be managed to keep open. • Neighbour seems agreeable to realigning the path at Knockbay, but will cost money.	infrastructure and safety.
5 – Landscape and amenity enhancement – Future forest design	• Opportunity to address issues caused by straight edges; through felling existing mature conifers and redesigning second rotation crops. • Opportunity to enhance potential Visitor Zones with increased species diversity • Opportunity to remove skyline fringes and lower upper planting edge • Opportunity to diversify visual aspects of the forest	• Loss of commercial potential through switch to broadleaves, Scots pine and increased open space. • Increased establishment costs.	• Develop a mixed amenity woodland to deliver landscape and recreation benefits. • Improve forest edges through use of redesigned shapes, species and open space. • Introduce more open space along recreation routes and bike trails to improve visitor experience, viewpoints and safety aspects

Objective	Opportunities	Issues and Constraints	Concept
	from key external viewpoints. • Public consultation favoured development of a native woodland.		
6 – Development of forest health resilience measures against tree diseases – Future forest design	• Species choice can move away from disease-prone species once felling is complete.	• Rhododendron will continue to be a problem, given its abundance on adjoining private land.	• All larch to be removed during the plan period. • Build in diversity into the next rotation for resilience. • No disease-prone species to be planted
7 – Blanket bog/deep peat restoration	• Only a small area of deep peat within the plan, so restoration more easily accommodated. • Opportunity to secure carbon and encourage future carbon capture.	• Checked trees will require felling to waste. Mature trees will produce a lot of mulched material. • Deforested areas may require ongoing control of conifer regeneration. • Some areas fall into the reservoir's catchment. • Access more machinery is challenging.	• Restore deep peat areas and ensure adequate buffering and effective maintenance.
8 – Open habitat network enhancement	• Priority habitat restoration, including peatland restoration, will create stronger open habitat linkages in the upper parts of the forest. • More open space in these areas will	• Loss of some productive forest, although a significant amount is unsuitable for forestry. • Costly to clear conifers and to control regeneration. • Access constraints make future management more difficult.	• Create and maintain new open habitat linkages, with benefits for peatland restoration, wildlife, and amenity.

Objective	Opportunities	Issues and Constraints	Concept
	have benefits for Black grouse and raptors.		
9 – Rhododendron control	• Conifer removal will allow clearer identification of bushes and easier access to control. • Elimination will remove any *Phytophthora ramorum* present on the bushes.	• Seeding will continue from external sources. • Conifer removal will increase the opportunity for seedling establishment. • Public access makes rhododendron control operations more difficult	• Control rhododendron as per national policy and as funds permit. • Work with neighbours to encourage control of rhododendron on their properties. • Plant beech to act as a buffer
10 - To comply with UKWAS guidance for certification and UKFS	• Opportunity to design next rotation forest to comply with UKWAS and UKFS.	• Deer numbers need to be kept down to achieve establishment of vulnerable species	• Ensure the plan complies with all current policy documents and guidance.

4.0 Management practices

4.1 Harvesting, marketing and silvicultural systems

4.1.1 Clearfelling and timber marketing (See also Appendix II 3.5.5)

Clearfelling of the conifers was mostly initially approved under SPHN's, felling amendments and felling permissions. All felling amendments and felling permissions, apart from the SPHN's have now expired and require renewal under the new plan for areas that have still to be felled. The south-eastern section above the forest road up to the upper tree edge, contains some poor growth that will need to be manually felled, along with sections of larch. Poor larch form and processing controls have contributed to the negative financial return on harvesting operations. Upper areas were only fit for mulching due to poor growth. These factors favour future forest management for amenity, with appropriate LISS management, rather than commercial woodland under a clearfell system. Only a small number of mature broadleaves will be left on site after conifer removal, so no felling operations other than the removal of the occasional broadleaved tree for safety reasons connected with public access is foreseeable for some time to come. Associated felled material is unlikely to be removed from site in the short to medium term. The current plan is to harvest all the remaining commercial conifers from September 2024. There are areas of poor growth within this area. Discussions with the timber buyer will take place ahead of the contract starting to determine the best solution for these areas, which most likely will be felled and left on site. Areas to be mulched at the top of the hill may be dealt with the following year, but will require the excambion to be in place for the whole area to be completed.

A clump of Norway spruce above the cemetery, between the powerline and oil pipeline, will also be felled to avoid issues arising with these utilities in the future. Working methods and liaison with relevant stakeholders will be undertaken as part of the Work Plan process.

Table 4.1 Felling area analysis

Phase	1	2	3	4	5	6+	LISS	Open and other	Sum
Area	46.0	-	-	-	-	-	2.8	95.2	144.0
%	32	-	-	-	-	-	2	66	100

4.1.2 Low Impact Systems (LISS)

The forest will be managed in the future under an Irregular Shelterwood system associated with Visitor Zone management. The precise form of management will be dependent on how the new forest develops and the needs associated with the recreation infrastructure.

Table 4.2 Future forest area summary – Low Impact Systems (LISS)

Type of woodland	Area (ha)	%
Continuous cover areas	48.8	34
Natural reserves	0	0
Minimum Intervention areas	0	0
Long-term retentions	0	0

LISS Woodland management therefore contributes 100% of the wooded area. It contributes 34% towards the area managed for conservation and enhancement of biodiversity as the primary objective (UKWAS 2.11.1). LISS also easily constitutes the minimum 2% of the plan area under UKWAS Maintenance of biodiversity and ecological functions (UKWAS 4.6.2).

4.1.3 Restructuring, diversity and landscape

4.1.3.1 Restructuring

The impact of *Phytophthora ramorum* on the forest has resulted in the decision to sell all mature conifers over a short time period. Consequently, no restructuring will be possible. The subsequent rotation is also planned as LISS, which will also result in a relatively uniform forest in

the short term. Some natural restructuring is likely over time, however, including that resulting from differences in growth rates dictated by varying site conditions.

Table 4.3 Future forest structure

Age of Trees (Years)	Successional Stage	Percentage of Forest over Year		
		2023	2034	2044
0 – 10	Establishment	-	94	-
11 – 20	Scrub and early thicket	-	-	94
21 – 40	Thicket and pole stage	-	-	-
41 – 60	Mature high forest	100	6	
61+	Old forest	-	-	6
		100	100	100

4.1.3.2 Diversity

There are environmental, landscaping and social reasons for increasing diversity. Increasing diversity may have possible benefits for countering possible effects of climate change. Plan policies will seek to increase diversity aswell as protect what is already there, such as deep peat and Upland heathland in the upper areas.

4.1.3.3 Landscape (See also Appendix II 3.7)

The suggested specific landscape guidelines that are pertinent to the plan area from SNH's former Landscape Character Assessment for 'Upland Forest-Moor Mosaic' are as follows:-

- Conserve contrast in landscape pattern between the large-scale moorland/plantation mosaic and the more diverse and smaller scale landscape on the fringes, particularly through the use of broadleaves on the fringes
- Maintain a balance between the forest and open moorland elements in the mosaic.
- Design plantations to create valuable wildlife corridors, conserving areas of ecological interest.

- Give special consideration to views from public roads in designing form, structure and phasing of conifer plantations.
- Conserve the setting of distinctive features; small lochs, striking rocky outcrops, and buildings.
- Control rhododendron

The forest offers opportunities to increase native woodland, open space and to redesign edges. The guidelines also refer to the sensitivity of coastal areas to change. Whilst Beinn Ghuilean is not on the coast, it is close to Campbeltown Loch and views across that loch from High Askomil and the B842.

4.1.3.4 Landform

(See Map 4.4 – Landscape Character Analysis). The underlying landform has an almost terraced appearance on the lower slopes, the terraces running across the face of the hill, descending slowly to the west (visible on pre-afforestation photos). Between them are steeper banks. These are then cut through by several stream gullies. The upper areas to the skyline are more rugged and less plantable. Achieving a visual balance between the future planted and unplanted areas below the skyline is important, whilst avoiding recreating straight edges influenced by the terraced landform and forest edges. Similarly, the planting of spruce in the hollows and on the terraces, has emphasised the linear appearance of these landform features, which needs to be avoided at the next rotation.

4.1.3.5 Visibility

Specific viewpoints and focal points in the landscape have been identified for more detailed assessment and design. External views from the town and from public roads are the most important. However, internal views are important as viewpoints overlooking the town and loch. Keeping these open and identifying new ones are related to future recreational usage and trail locations. Higher parts of the forest are more visible, whilst some lower parts are hidden in views from Campbeltown by Barley Bannocks Hill and Crosshill. Conifers visible on the skyline in the upper area fall under the felling permission granted in 2020 and are awaiting mulching.

4.1.3.6 Land use

Two-thirds of the forest area was under commercial conifers prior to the issue of SPHN's from 2019. The remainder comprises unplantable areas, including Blanket bog. Under the new LMP, two-thirds of the area will be managed as permanent open space and the remainder as amenity woodland.

Neighbouring landuse comprises predominantly rough or semi-improved pasture and moorland heath. Should the Glenramskill forest scheme go ahead, then a mixture of commercial forestry and native woodland will develop along the eastern side of FLS property, with implications for the management of the woodland edge between the properties. Fencing, deer management and deer movement may also change. The Black Loch, which is situated just to the south-west of the forest, is an example of a small upland loch.

Neighbouring land use may be affected if forest operations affect watercourses. Protecting water quality entering the Crosshill Loch reservoir is a priority. Adherence to the UKFS guidelines in relation to water will minimise disturbance.

4.1.3.7 Native woodland

Native woodland presence, excluding that planted in the forest, is negligible. Planting is preferred option for broadleaves, but with some potential for natural regeneration in lower areas where broadleaved seed sources grow alongside the bottom fence and up riparian gullies. Very little native woodland exists outside the forest area. Gorse is also abundant in places on neighbouring land. Upper areas above the new designed upper planting line are largely unsuitable for broadleaves or only suitable for Grey alder when assessed using ESC (Ecological Site Classification). Lower areas can support a much wider variety of broadleaved tree species.

4.2 Restocking proposals

4.2.1 Conifers

Beinn Ghuilean will be developed as a community woodland, focusing on native species and broadleaved woodland. Consequently, no commercial conifer planting is envisaged. Some lower areas are suited to a wide range of species, but other parts are more restricted by exposure and soil nutrients. Deer control is an issue as shooting is difficult in areas with high recreational use or close to residential areas. Establishment of some species may therefore prove more challenging unless expensive deer fencing can be funded. Use of mixtures is supported as a measure to build in resilience against climate change. Scots pine will be planted in varying mixtures with broadleaves to increase diversity and texture in the landscape. A small amount of Western red cedar will be planted amongst the beech planned above the cemetery, to link with conifer plantings in the cemetery.

4.2.2 Broadleaves

Planted broadleaves are envisaged for most broadleaved areas. As there are no Ancient Woodland sites in the plan area and non-native species such as sycamore have generally performed well, planting of non-native species will form an element of the species composition in the next rotation. This will have benefits for amenity. An allowance of up to 25% non-native species in suggested but will be site dependent. Sycamore forms a useful substitute for ash, which will not be planted due to the spread of *Chalara fraxinea.* It may also be used to reinforce areas allocated to natural regeneration if regeneration success is poor. Beech will be planted above the cemetery as a measure to inhibit the spread of rhododendron from the adjoining private ground and cemetery area.

4.2.3 Analysis

The figures in Table 4.5 show an increase in the areas of broadleaves and Scots pine to create the amenity woodland. Internal open space increases to meet recreational aspirations. Commercial conifer is removed. Semi-natural habitats constitute more than the 5% requirement under UKWAS 4.4.3. Unwanted conifer regeneration will be removed in line with the region's policy on when to intervene (see section 4.8). The above figures exclude the adjustments to be made pending the completion of the Land Registration process, or the ongoing excambion with the Glenramskill Estate.

Table 4.4 LMP Species distribution

Wooded areas	**2020**		**2033**		**2043**	
Species	**Area (ha)**	**%**	**Area (ha)**	**%**	**Area (ha)**	**%**
Sitka spruce	33.2	33	-	-	-	-
Norway spruce	0.1	-	-	-	-	-
Larches	33.0	33	-	-	-	-
Lodgepole pine	7.8	8	-	-	-	-
Scots pine	-	-	18.4	30	18.4	30
Western red cedar	-	-	0.3	-	0.3	-

Wooded areas	2020		2033		2043	
Species	**Area (ha)**	**%**	**Area (ha)**	**%**	**Area (ha)**	**%**
Mixed Native Broadleaves	2.4	2	24.1	40	24.1	40
Non-native broadleaves	0.4	-	6.0	10	6.0	10
Rhododendron	0.1	-	-	-	-	-
Failed	5.3	5	-	-	-	-
Internal open space	18.8	19	12.1	20	12.1	20
Other open space (including deforestation)	-	-	46.0	-	-	-
TOTALS	**101.1**	**100**	**106.9**	**100**	**60.9**	**100**
Open hill tops	37.1		37.1		76.0	
Lost land/extra land (Open areas)	3.7*		-		-	
Extra land (wooded)	2.1*		-		-	
Bog restoration	-		-		7.1	
TOTALS	**144.0**		**144.0**		**144.0**	

*Subject to excambion, in progress

Restocking is subject to the approval of the LMP. Consequently, restocking is likely to be delayed by more than two years on some sites, notably those felled in 2019. Restocking is currently anticipated in 2027. This may result in increased establishment costs due to additional weed growth. Restocking by natural regeneration will be adopted for broadleaved areas along the northern edge. This may be supplemented by reinforcement planting, including planting of sycamore.

4.3 Recreation

No new recreation facilities are currently planned by FLS. Community aspirations will be noted and acted upon where possible, but funding will largely need to come from external sources. FLS are currently working with the mountain bike club, who already carry out improvements to the existing bike trails. Future modifications to the forest aim to; improve sightlines along bike trails by selectively removing trees; open up intersections between bike trails and footpaths for again for visibility; and keep woodland away from bike trails to improve lighting. Further discussions will be undertaken with the club regarding the number and siting of trails once harvesting is completed. Some damage to trails will arise because of harvesting operations. Once these are completed, the trail layout will be reassessed in consultation with stakeholders.

The two Welcome Zones are intended to give an open feel to the forest entrances. Few if any trees will be encouraged in these areas. Opportunities to establishing new viewpoints will be looked at once all existing conifers have been removed and the path/trail network reassessed.

4.4 Protection

4.4.1 Deer management

(See Appendix VII for Deer Management plan)

Roe deer are all present in the forest in low numbers. Deer stalking will be the preferred method of deer control, in line with the Region's Deer Management Strategy. Deer management will comply with SNH's 'Code of Practice on Deer Management'; Code of deer management - Scottish Natural Heritage Night shooting is not currently undertaken at Beinn Ghuilean. Any future deer fencing will comply with the Joint Agency Fencing guidance; Deer fencing guidance - Scottish Natural Heritage. Neighbours practicing stock grazing largely border the forest area. The forest is not covered by a local Deer Management Group. External deer pressure is low.

Although no gardens associated with private properties back on the forest and are some distance from it, at the community consultation exercise in 2003, some residents complained about deer in their gardens, alleging they came from the forest. There were also complaints about deer eating flowers in the cemetery. However, FLS felt that it was more likely that deer were sheltering in neighbouring gorse-infested areas on the farmland between the forest and the town.

Stock fencing surrounds the forest. The need to renew stock fencing will be discussed with neighbours as needs arise. No concerns have been raised by neighbours. There have only been

occasional reports of sheep ingress into the forest. About 3850 m of stock fencing is due for replacement with multiple neighbours to reach agreements with. Should the Glenramskill afforestation scheme go ahead, the estate WILL deer fence the scheme boundary, including the march with FLS property, given the potential risk of deer entering the scheme from FLS land or from elsewhere through FLS land.

Complete felling of Beinn Ghuilean, apart from lower broadleaved edges and riparian corridors, is likely to affect deer numbers, reducing their cover. Shooting is currently not undertaken due to public safety concerns. Public access to the area, including late at night at the early hours of the morning, also creates ongoing disturbance, which may further discourage deer from using the area and therefore browsing newly planted trees.

No new ranger access tracks are planned as these would likely attract the public into areas where deer control might be undertaken. However, access requirements for restocking operations have yet to be assessed. Should any subsequently be built, these may have benefit for deer control or recreation.

4.4.2 Fire

Due to climate change, there is an increasing risk of fires across the National Forest Estate (NFE). The proposals within this plan aim to limit the risk through species diversification, as well as having open rides. The road corridor also provides a barrier for fires and enables access to some areas if a fire were to occur. There are no known incidents of forest fire having arisen in the forest, but the is a higher-than-normal risk here due to the level of public access. Policies of neighbouring estates have not included muir-burning. Access is currently poor to upper areas. The region maintains a Fire Plan which sets out the policies and procedures during the fire season (Feb-May).

4.4.3 Flood risk prevention

4.4.3.1 Incidence of Flooding

There are no known cases of flooding in or downstream of the forest. Spates have been known to take out footpath bridges over gullied watercourses in the past. SEPA's Flood Risk Management Map Flood Risk Management Maps suggests that Crosshill and Black Lochs are both highly susceptible to flooding, although this does not seem to affect the watercourses flowing out from them. Flood Risk Management Plans are outlined by SEPA here: SEPA Flood risk Consultation

4.4.3.2 Catchment management (See also Appendix X)

The requirement not to fell more than 20% of the catchment within a 3-year period (UKFS requirement), as woodland dissipates runoff from heavy or prolonged rainfall, has not be met due to the need to deal with infected larch in the forest. Standard cultivation practices will be employed, but with additional care in water catchments, adhering strictly to UKFS guidelines for water management. Cultivation methods will be employed that are sensitive to flood risk. Mounding rather than ploughing will be preferred for cultivation, to minimize runoff and erosion risk. However, consideration will be given to employing direct planting, dependent upon site conditions after harvesting. This may, in any case, be necessary on the steeper slopes. All new and restored drains will not flow into drains and watercourses that flow directly into the reservoir. However, drainage design will not adversely affect water capture for the reservoir or alter the existing system of feeder drains. Planting along watercourses with broadleaves will help buffer against the effects of heavy precipitation events.

4.4.4 Climate change

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. In terms of the next rotation these figures 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.

Wind strengths and the frequency of gales may increase with Climate Change. This may reduce opportunities for thinning. Developing a mixture woodland with varied structure through CCF may prove more resilient to gales.

Development of robust habitat networks is seen as part of the strategy for developing resilience against the effects of Climate Change. Broadleaved networks will be strengthened to increase resilience against climate change around the lower parts of the forest. Open habitat networks will benefit from deep peat restoration in upper areas and permanent removal of conifers.

4.5 Heritage

There are no archaeological sites currently identified within the forest, apart from an aircraft crash site with no visible remains. Archaeological advice said that no particular actions such as creation of a buffer zone were required, but any finds would need reporting. New sites may be identified when pre-operational work site checks are undertaken. A couple of scheduled

medieval crosses are located in the cemetery. The proposed changes to the forest are unlikely to have a negative impact on the setting of these monuments.

The region's Cultural Heritage Strategy details working methods around sites. The region's heritage records have been consulted which include data from searches of RCAHMS inventories, WoSAS online data and NMRS data. Sites are managed in accordance with the following guidance Forests & the historic environment

4.6 Monitoring

Monitoring of outputs within the plan area are handled in accordance with the region's Monitoring Plan. Specific methodologies are detailed under separate guidance documents. Responsibilities for undertaking, recording and responding to the results of ongoing monitoring are also detailed in these documents. Any monitoring relevant to LMP delivery will be reviewed at the mid-term review stage. Monitoring of water quality in the reservoir is undertaken by the distilleries.

4.7 Habitats and wildlife

4.7.1 Wildlife

4.7.1.1 Birds

Some Black and Red grouse are present in the upper areas. No leks are known within the forest area. Work to improve their habitat was not progressed due to funding priorities elsewhere. This included conifer respacing, which has now been superseded by mulching under the 2019/20 felling permission. Further changes to the area will arise from deep peat restoration. Increase in open habitat will benefit raptors and other moorland birds. Development of mixed woodland with a high proportion of native species, managed under LISS, will have a positive benefit on woodland bird numbers. Nesting sites exist in and around the forest. These will be managed in accordance with current guidelines.

4.7.1.2 Other wildlife

Dragonflies are present on the lochs. FLS are currently looking into whether there are any measures that can be undertaken to improve their habitat.

4.7.2 Open habitats

4.7.2.1 Bogs

Peat probing in and around the areas of deep peat shown on the Soils Map (Map 3.1) has shown some differences, including deep peat out with the deep peat polygons and shallow peat within the polygons. Peat probing will help define the area for future restoration. The FCS document 'Deciding future management options for afforested deep peatland' will be followed. The 2019/20 felling permission gave authority to clear the upper areas of conifers, including the areas for deep peat restoration. However, the former LMP expired before this work could be undertaken, so a felling permission was subsequently applied for. The peatland areas are primarily Unflushed Calluna Blanket bogs. Some small areas of Juncus bog occur, often in mixture with loamy peaty gleys and mostly in the upper areas. Conifer regrowth and seeding will be controlled after peatland restoration.

4.7.2.2 Open hill tops

The upper area will become a single open hilltop unit containing various topographic and ecological components. Some of the area will be subject to deep peat restoration after deconiferisation. Black grouse management operations, such as swiping, may be undertaken in the future, as part of open habitat restoration works. Deer control to encourage some low broadleaved regeneration will also be maintained when circumstances allow.

4.7.2.3 Water and riparian management

UKFS guidelines for water will be rigorously applied in respect of the reservoir catchment. Existing drains/watercourses in hollows that flow into the loch will not be redug and new drainage channels will not feed directly into them. Some of these are within areas of deep peat planned for restoration. Use of treated trees within the catchment is not envisaged. Direct planting may be employed in areas more sensitive to cultivation. Strengthening native woodland presence along riparian corridors will help buffer water runoff feeding into the reservoir. Management methodologies will aim to prevent eutrophication of the two lochs.

4.7.3 Deadwood

Harvesting debris will provide deadwood in the short term. Existing broadleaved areas may also contain some deadwood. Monitoring will be required to ensure the minimum UKWAS target is met. Work plans will consider options for creating deadwood where shortfalls arise, to achieve the desired target of 20 m^3/ha. Deadwood will routinely be identified at Work Plan stage;

selection being based on available opportunities and with reference to deadwood management guidance. Deadwood resource mapping is not currently identified geospatially in the region, but a generalized evaluation based on anticipated deadwood content of different woodland types and histories has been produced. This ranks sites as either; low, medium, or high, but has not been ground truthed. Some deadwood is also likely to arise as a result of Visitor Zone management in the future.

4.8 Invasive species

Rhododendron regeneration will be removed as part of the district's eradication policy. Rhododendron presence will be reassessed at mid-term review and again for the next plan. Monitoring will be undertaken every 5 years. The current intention is to cut and burn, plus stump treatment with Glyphosate, and a degree of follow-up spraying of regrowth. Planting of a woodland barrier above the cemetery will also help prevent further seeding and establishment of rhododendron from the adjoining private land and cemetery.

4.9 EIA scoping enquiry requests for forestry projects

Scottish Forestry (SF) is responsible for EIA determinations for afforestation, deforestation, forest roads and forest quarries, and where consent is required; an EIA report will be needed. National thresholds form part of the regulations and can be found in FCS Briefing Note No. 10. SF maintains an online EIA register. Operations falling below the threshold for a determination/screening opinion will still be submitted to SF under current arrangements. Consent is valid for 5 years. Consequently, operations planned for the second 5-year period requiring a screening opinion can only be sought at the end of the first 5 years of the plan in order to be valid for the remaining plan life.

Table 4.5 Projects requiring EIA scoping enquiry requests during the plan period

Operation	Description
Deforestation	Restoration of deep peat areas (7.1 ha)
	Open habitat restoration (12.7 ha)
	Landscaping (10.9 ha)

4.9.1 Proposed deforestation (See Maps 4.5, 5.2 and 5.9)

Areas proposed for deforestation are as noted in Table 4.5. Details for the deforestation works are contained in the EIA Scoping Enquiry section of the text.

4.9.2 Proposed tracks

Access for deer control is required to the top of the hill/Black Loch area. However, the wildlife team have raised concerns that any track constructed would quickly become popular with walkers and mountain bikers, which would make stalking difficult. Consequently, their preference is for no track access to be provided. Restock tracks may be required but have not been decided upon as yet. Should these be required, EIA Screening Opinion Requests will be sought nearer the time. Similarly, permission for any tracks required for winch or forwarder access will only be sought after a successful timber buyer has assessed the requirements on site. Currently, the plan is for the FLS harvesting team to undertake to work, without need for any forwarder track provision.

All tracks will be built from material won on site. Track construction will be UKFS compliant. Stream crossings will be processed under the SEPA CAR Regulations in advance of construction. The design will conform to the Timber Transport Forum document 'The design and use of the structural pavement of unsealed roads, 2014'; The Design and Use of the structural pavement of unsealed roads.pdf
It will also conform to SNH's 'Constructed tracks in the Scottish Uplands' revised September 2015;
SNH Constructed tracks in the Scottish Uplands.pdf

In addition to the above, road maintenance of the existing main access road will be required, in agreement with other users where appropriate.

Haulage will be onto the public road (Tomaig Road) in accordance with the Timber Traffic Management Plan (See Appendix VIII) agreed with the Council. Haulage will adhere to the following protocols 'The ATTG Protocol for Timber Haulage in Argyll and Bute'; The ATTG Protocol for Timber Haulage in Argyll and Bute and with the 'Protocol for Timber Transport Operations (Appendix 1)';Protocol for Timber Transport Operations Appendix 1

5.0 Critical success factors

The following outcomes are required: -

- The harvesting program requires felling of 42.9 ha.
- Removal of all existing conifers within the next 5 years requires completion of harvesting and mulching work (42.9 ha).
- The restocking program (46.0 ha) requires establishment during the plan period.
- Establishment of 46.0 ha of mixed woodland requires effective deer control.
- Peatland restoration – requires 7.1 ha of conifer removal in Phase 1 and additional minor restoration works on 11.8 ha of existing open peatland.
- Protection of water supplies requires adherence to the UKFS guidelines.
- Compliance with SPHN's and forest health resilience requires the felling of remaining larch (20.8 ha).
- Landscape enhancements require delivery of felling and restocking programs, along with subsequent control of woodland regeneration above the designed tree line (10.9 ha).
- Recreation improvements require the establishment of the mixed woodland for amenity, the creation of designed open space associated with Visitor Zones and viewpoints and successful partnership working with stakeholders.
- Open habitat restoration (12.7 ha) requires the removal of conifers from upper areas.
- Rhododendron control requires effective removal of rhododendron, establishment of a beech barrier above the cemetery and routine monitoring.

Appendix I: Land management plan consultation/scoping record

Consultee type	Details of consultation			
Statutory Consultee	Date contacted	Date response received	Issue raised	Forest Region Response
SNH/Nature Scot	20/02/2024	21/02/2024	We do not intend to offer formal comment on this proposal as it falls below the Scottish Forestry and Statutory Consultees Joint Working Agreement for forestry related casework. In general, NatureScot will focus on guidance, standing advice and early engagement. Inputs to individual applications will usually be restricted to those that could significantly affect protected areas.	
SEPA	20/02/2024	23/02/2024	Only standard general response received (see Appendix XVIII)	
HES	06/03/2024	08/03/2024	No scheduled monuments present, therefore no comments to make regarding this consultation.	
Neighbours	Date contacted	Date response received	Issue raised	Forest Region Response
Crosshill Farm				
Narrowfield Kennels	13/02/2024			

Consultee type	Details of consultation			
Knockbay Farm	29/11/2022	At drop-in meeting	Suggested informal path across farm to forest could be run along the outer side of the cemetery wall instead	Rec team suggested this should be led by the Council.
Springbank Distillery	13/12/2021 20/02/2024	13/12/2021	Acknowledgement only.	(This was an FLS notification and explanation of the SPHN and felling proposal).
Glen Scotia Distillery	13/12/2021 20/02/2024			
McFadyen Contractor's Ltd	13/12/2021 20/02/2024			
Glenramskill Farm	10/05/2023 and various other dates by other staff members	10/05/2023 and other dates	Scottish Woodlands Ltd (for their New Woodland Creation Scheme) wanted confirmation of likely felling and restocking proposals. They also intended to deer fence the march but were unaware of the proposed excambion. They said that a TTMP would likely reduce their need for access through the forest. Wanted to know what management we would undertake on planned open ground adjoining march and whether we would	Said that we would be going forward with native woodland option. Waiting to see what further SPHN's might arise this year before finalizing the felling plan. Said beat forester would meet with them on site to review fence proposals as required. Open ground management – regeneration of broadleaves unlikely due to soils, exposure and deer pressure; but might see some conifer regeneration that

Consultee type	Details of consultation			
			encourage native woodland regeneration here.	might need to be controlled.
Community Groups	Date contacted	Date response received	Issue raised	Forest Region Response
Campbeltown Community Council	08/11/2021			(This was notification of the community consultation event - responses made by CC at the drop-in)
	14/11/2023 20/11/2023		No issues	These were examples of dates of general chats with the FLS Visitor Services team
	20/02/2024			
Others	Date contacted	Date response received	Issue raised	Forest Region Response
Argyll & Bute Council: - Flood prevention Planning Access officer Roads	20/02/2024	22/02/2024	Acknowledgement only	
RSPB	20/02/2024	23/02/2024	Limit access tracks to deter public disturbance of Black grouse. Plant low density varied shrub along edges. Fill in deep ditches during	Unlikely to build tracks to peatland area. Deep ditches in open peatland areas will be 'zipped' (infilled). Other drains likely to

Consultee type	Details of consultation			
			peatland restoration work, to protect chicks.	have sphagnum content, but no infilling likely, only drain blocking. Low density shrub edges will develop naturally provided deer control is effective.
Scottish Water	20/02/2024			
Kintyre Trail Association	29/11/2022	07/03/2023	Undertaken some informal community consultation and all those spoken to in favour of mainly native species/broadleaves etc. design	Said we were going with this approach.
	20/02/2024			
Argyll Timber transport Group	14/03/2023	14/03/2023	Iain Catterwell (ATTG) spoke to Council about Tomaig Road haulage use - said the Campbeltown Flood Prevention Works are ongoing and to suggest that the Council would rather stick to the normal May to September season. The extension into the Autumn/winter months is very much dependent on the prevailing conditions at the time of consultation.	Noted by Senior Program Manager FLS.
Public drop-in meeting -	29/11/2022	At meeting and	General preference for native woodland, more	Native woodland/mixed

Consultee type	Details of consultation			
		questionnaire responses returned.	foot and bike trails and recreation furniture, viewpoints, better management, trail guides, all-ability trails, solar lighting, improved signage for health & safety, car park, top of hill left open. One suggestion for conversion to community woodland. One respondent did not want work done on bike tracks.	amenity woodland option adopted. Recreation infrastructure will be looked at in more detail once harvesting is complete. A mix of cycle and pedestrian trails will be continued.
Tom Nisbet (Forest Research)	16/12/2021	20/01/2022	See appendix	(FLS enquiry to FR for advice). Pre-sampling and on-site controls likely response.
Scottish Forestry	20/02/2024	20/02/2023	SF noted that no restocking had been undertaken to date.	FLS said that the felling amendment and felling permission stated that changes to proposed restocking could only be approved through the new LMP. FLS also said that these proposals will be for broadleaved/Scots pine amenity woodland. SF did not see an issue with this, as these woodlands tend to restructure naturally over time

Consultee type	Details of consultation			
	20/02/2024	22/05/2024	Requested timeline of felling amendments and SPHN'S. Recommended combining deforestation EIA SOR's into one. Provided additional EIA SOR guidance on EIA Environmental Receptors	Agreed
The Oils and Pipelines Agency	28/05/2024			

Appendix II: Supporting information

List of Appendix II

II/1.0 The existing forest and land holding

II/1.1 History of the land holding

The forest area was acquired in 1973. The forest was planted in 1979. Some recreation trails were introduced in the 1990's and footbridge replacements undertaken when necessary. A mountain bike trail was created in 2006. A new Forest Design Plan (FDP) was approved in 2007. The forest road was built about 2016. Harvesting of the first SPHN and associated felling permission area commenced in January 2020. Felling of productive timber under the felling permission was completed by April, leaving considerable areas of low value higher elevation timber for mulching at some point. Two subsequent SPHN's have not yet been felled.

II/2.0 Analysis of the previous plan

II/2.1 Aims of the previous plan and achievements (See Appendix III Table II/2.1)

The previous FDP expired on 31/01/2017 and was extended until 31/01/2020, before being extended again until 31/01/2022. The additional felling associated with the SPHN was approved on 15/11/2019, with conditions:

- approval expires with the extended life of the plan.
- any restocking changes are to be approved through the new LMP.
- community consultation is to be ongoing throughout operations.

The larch felling was completed, but the additional felling requiring mulching of uneconomically harvestable timber was not undertaken prior to the expiry of the plan. The former plan also secured approval for the felling for a Phase 2 coupe at the eastern end of the forest road, comprising Sitka spruce with some windblow present. This coupe has not been felled. The remainder of the lower areas were planned for CCF, but the lack of a road prevented thinning. This in turn prevented implementation of small-scale diversity improvements, including increase in broadleaves to 15% with localised benefits in protecting riparian areas associated with the reservoir, and edge modifications for landscape improvement. However, the SPHN's and associated felling address some of the landscape issues and will provide opportunity to restock with alternative species under the new plan. No associated network of tracks to support tractor-trailer systems of harvesting have been built, with associated opportunities lost for additional

recreation routes and ranger access. However, a track was constructed as part of the SPHN work along the north-western edge of the forest, but the harvesting systems used involved standard forest machinery and working methods. Two further SPHN's, currently awaiting felling, will cause further departure from the silvicultural proposals of the previous plan.

Suggested improvements to recreation facilities have not happened, other than positive engagement with local mountain-bikers. No further improvements to facilitate deer control have been undertaken. No heather management or respacing of higher elevation poorly grown conifers has been undertaken to improve Black grouse habitat as funding priorities have been elsewhere.

Proposed new planting on the eastern edge of the forest has not taken place. This amounted to 2 ha and was aimed at improving the visual edge to the forest. The small scale of the works was an issue logistically and financially, better suited to implementation and association with future adjoining restocking.

II/2.2 How the previous plan relates to today's objectives

A number of general issues and events have arisen within the plan area. These include: -

- forest resilience to climate change would encourage further species diversification.
- plant health issues have resulted in bans on planting larch, ash and Lodgepole pine (with the exception of Alaskan provenance in mixture with spruce).
- the larch SPHN's and associated felling have changed the silvicultural management of the affected area of forest and points to the vulnerability of the remaining larch to infection.
- new policy guidance relating to the conservation of deep peat will impact on the existing proposals to respace areas of low yield class conifers for Black grouse cover.
- access has been provided from Tomaig, with a Timber Traffic Management Plan in place.
- small pockets of windblow that had arisen under the old plan have not developed further but may do so as more larch is felled.
- clearfelling allows a new design to meet public desires, including increased openness and percentage of broadleaves.
- existing upper edges have been identified as in need of improvement, but these could only be partially addressed by the previous plan's CCF silvicultural system.
- Mountain bikers are now more proactively engaged in the forest, but there are emerging areas of conflict with walkers to be resolved. Lighting issues under dark conifers and potential water issues on tracks after trees are removed present further concerns.

- two distilleries use Crosshill Loch reservoir, whose catchment includes much of the forest.
- agreement to progress a proposed excambion along the south-eastern boundary has been reached.

II/3.0 Background information

II/3.1 Introduction

Beinn Ghuilean Forest is an important community asset on the outskirts of Campbeltown. Its trails are well-used, some of which are Core Paths. It is also part of the Woods in and Around Towns (WIAT) Initiative, which aims to provide more opportunities for people to enjoy the countryside, with associated health, education, skills and community benefits. Timber production is becoming less important as the forest is developed towards a more resilient and environmentally friendly forest in the future. As at 1st December 2023, three notified SPHN's have considerably impacted on the management of the forest, with this trend set to continue on the short term. The new and evolving Deep Peat protection policy also affects the upper parts of the forest.

II/3.2 The existing land holding

Beinn Ghuilean Forest comprises 144 ha. The lower area is mostly planted with commercial conifers, but there are also some areas of planted amenity broadleaves, along with some regenerated broadleaves within the stream gullies. Sitka spruce and larch were the main commercial conifers planted, with smaller amounts of Lodgepole pine in the west and upper parts. Significant areas of open space, typically deep peat, occur in the upper areas. The lower areas are more sheltered and offer better soils, but there are also steep slopes and skeletal soils present. The south-eastern fence line departs from the legal boundary in a number of places, which has resulted in some non-FLS land being planted with commercial conifers.

Access for timber haulage is off the Tomaig Road at Narrowfield Farmhouse, where another track leads off to Crosshill Farm. From this point, a track runs across farmland to the forest boundary, with several cattle grids along the route. The forest road then continues, rising only slowly to the eastern side of the forest. No vehicular access to the upper part of the forest exists or could reasonably be built.

The forest also contains several water pipes and drainage channels associated with Crosshill Loch reservoir. An oil pipeline also cuts across the north-eastern corner of the forest. This is managed

by the Oils and Pipelines Agency and runs from Campbeltown Oil storage facility to Machrihanish airport. A powerline follows a similar route here.

The land holding is stock-fenced. There are multiple adjoining landowners requiring negotiation to repair or replace fences. The eastern side was replaced in 2011, but the remainder is more than 20 years old and is nearing the end of its life.

The land holding also includes the Campbeltown forest office in the Snipefield Industrial Estate. This includes storage areas and a deer larder.

II/3.3 Setting and context

The forest lies on the north-facing slopes of Beinn Ghuilean, a prominent hill and viewpoint just outside the FLS boundary to the south-east. The ground rises from about 40 meters above sea level, to over 300 meters at its highest point. Various watercourses run through the forest, many feeding into Crosshill Loch reservoir to the north. The smaller Black Loch lies immediately to the south-west. The wider local area comprises mostly of agricultural land. Campbeltown' s cemetery is located adjacent to the north-east corner of the forest. There are no woodland habitat connections out with the forest boundary. The adjoining land is generally treeless. Enclosed field patterns predominate to the north and west, with open heather moorland and peat bog to the south and east. The lower parts of the forest are highly visible from Campbeltown, with landscape design being an important aspect of the LMP. Recreational access to the forest is gained via the forest road, a path adjacent to the cemetery and other informal paths across farmland between the town and forest. These links and visibility of the forest closely link it to the town and community.

II/3.4 Physical site factors

II/3.4.1 Geology, soils and landform

The underlying geology is predominately Quartzite mica schist. Soils comprise Peaty gleys for the most part. Lower slopes contain some areas of Brown earth and Surface Water gley soils. Smaller components include some Juncus bog. However, field observations might suggest larger areas of weak podzols and skeletal soils. Upper areas are a mixture of Unflushed Blanket bog (Calluna) and Peaty gleys (loamy, ericaceous), with some skeletal soils on steeper slops.

The landform consists of strong, rough, rocky ridges running south-east north-west, plus shallow-gullied watercourses. Gradients are generally steep on the mid to lower slopes (40 – 50%), but are gentler on the upper slopes (25 – 30%).

II/3.4.2 Water

A number of watercourses feed into Crosshill Loch. Water flow to this has been enhanced by tapping water from other streams through the construction of ditches. There are also several water pipes feeding in water, but their functionality and course is unclear. Crosshill Loch supplies water to Springbank and Glen Scotia distilleries, and to McFadyen's yard. The reservoir catchment covers some 159 ha (See Map 3.2), of which about 103 ha falls within the Beinn Ghuilean Forest area. Other watercourses feed into the Kilkerran Burn and into Tomaig Glen, before entering the Machrihanish Water. A short section of the forest boundary borders the Black Loch, at the south-western corner, but no watercourses flow into this from FLS land. There is also a spring-fed cattle trough near the entrance gate.

II/3.4.3 Climate

The climate data for the forest (See Map 3.3) indicates the upper parts are moderately to highly exposed, cool and wet. The lower areas are described as warm and moist, with varying degrees of exposure, ranging from sheltered in the central section, to highly exposed on the western edge. A few pockets of windblow are present, mainly in the bigger spruce, but also including a larger patch in larch in the most sheltered part of the forest.

Effective joined up habitat networks help mitigate the effects of climate change by facilitating the movement of site type species through the network. Open networks within the forest are confined to the broad linkages between the open hill tops in the upper part of the forest and external open moorland.

No cases of flooding directly attributable to the forest area are known. There are no flood risk areas immediately adjoining the forest, although the two lochs are classed as high risk for flooding.

There are no renewable energy schemes in or around the woodland. The landscape sensitivity of the area is likely to reduce potential for windfarm development.

II/3.5 The existing forest

II/3.5.1 Age structure, species and yield class

Age class (see Table 4.4)

There is no variation in age class, the forest having been planted in 1979. There is a degree of variability in tree height related to exposure levels and soil types.

Yield class (see Map 3.11)

Pure Sitka spruce has achieved a high yield class (YC) in the lower plan area (20), 16 in mid-slope areas, but 8 or less on the upper slopes and Blanket bogs. Larch has also achieved average an YC on lower slopes (8), but 4 or less in mid and upper areas. No commercial broadleaves are present; existing broadleaved plantings have been planted for amenity and have not been assessed for YC. Lodgepole pine YC's are in the range 4 to 6. However, assessment of the crop attributes was undertaken during 2003, so is well out of date.
Species choice (see Table 5.5)

Sitka spruce is the main commercial conifer species, occupying 33% of the wooded area as at 1st January 2020. Some pockets of windblow have occurred but have stabilized. Larch also contributed 33% of the area. Larch form is generally poor. Some larch areas are severely understocked due to soils and bracken. Lodgepole pine adds a further 8%. Although the provenance is not identified, some of it has collapsed, indicative of South Coastal origin. It has not been assessed for Dothistroma Needle Blight. Non-native broadleaves are represented by sycamore and have not been fully inventoried. There is also some rhododendron on the north-east corner, which has spread in from the cemetery. Native broadleaved species contribute a further 2% and include a significant proportion of birch. The proportion of ash in the native mixed broadleaves is unknown and has not been assessed for *Chalara fraxinea,* which is becoming widespread in Argyll.

II/3.5.2 Access

FLS has a servitude right of access over a neighbour's land from Narrowfield Farmhouse. This was upgraded to a forest road in 2016. This connects onto a minor public road (Tomaig Road) which has haulage restrictions placed upon it by the Council (See Appendix VIII).

II/3.5.3 LISS potential

No thinning has been undertaken or is likely in the current conifer crops, but second rotation crops may offer potential in the more sheltered areas. Access may be an issue, along with the

number of trails in this area, but some Visitor Zone tree management is likely to be needed in the future.

II/3.5.4 Thinning potential

Half of the forest appears suitable for thinning based on DAMS data. Exceptions include steep ground, more exposed areas to the south and areas without any reasonable access.

II/3.5.5 Current and potential markets

Timber supply

Timber felled to date has been taken to the pier and dispatched by sea. Timber supply in the future is likely to be irregular, due to the limited amount of timber available and haulage restricted to the summer months.

Larch infected by *Phytophthora ramorum* has to go to approved sawmills for processing. Felling of larch must be completed within an agreed timescale stipulated under the SPHN and before flushing. All larch within 250 m of an infected site must also be felled under the notice.

Conifer timber quality

The forest grows Sitka spruce of reasonable form. Stocking densities are reasonably good in most places. Larch form is poor, notably with twists, and has suffered from understocking. Lodgepole pine is variable. Collapsed LP is of poor quality and is largely only suitable for mulching.

Hardwood timber

No commercial planting of hardwoods was carried out. No assessment of hardwood timber quality has been undertaken, which in any case was planted for amenity and riparian management. There are in addition, insufficient volumes to realistically market hardwood timber. Limited opportunities may arise with second rotation crops, though quantities may not be significant and be suitable only for local markets.

Timber in construction

Markets for spruce exist outside the forest district. Local markets for small roundwood for fencing may also arise, including with the local Auchencorvie sawmill.

Small Roundwood

Local markets for small roundwood for fencing may also exist.

II/3.6 Biodiversity and environmental designations

II/3.6.1 Designations

Natura sites and SSSI's (see Map 3.5)

There are no designated sites in the woodland or adjacent to it.

II/3.6.2 Habitats and species

Ancient Woodland Sites

Ancient Woodland is recorded on NCCS Inventory maps. No areas of Ancient Woodland occur within or immediately adjacent to the forest.

Species and habitats (see Map 3.6)

Birds

- Ravens use the rocky outcrops in the general area.
- Black and Red grouse use the open moorland, but numbers are very low.
- Raptors use the general area.

Other wildlife

- Dragonflies use Crosshill Loch and the Black Loch.
- Roe deer are present in the forest.
- Stone bramble is located in one of the gullies.

Native woodlands

Small amounts of native woodland can be found along some of the open riparian corridors. These are predominantly birch. Mixed broadleaves were predominantly planted at various locations along the northern edge of the forest. These include birch and sycamore.

Deadwood

Deadwood priority has been assigned according to the ecological classification of the site. Deadwood within the plan area is currently extremely limited, given short forest history. However, deadwood ecological potential for the main riparian areas has been classified as high, lower slopes as medium and upper areas and the eastern edge as low. A deadwood target of 20 m 3/ha across the whole forest is an UKWAS target.

Habitat networks

There are no native woodland habitat networks other than very narrow corridors up a couple of the burn gullies and long the northern edge of the forest, overlapping into private ground. Open habitat networks extend from the open upper areas into the open moorland to the south and east. Further connectivity to the west is developing as existing conifers are removed.

II/3.6.3 Open and riparian habitat

Open land

Open habitat survey has been undertaken recently but has yet (December 2021) to be uploaded.

External open habitats are broadly classified as undifferentiated heather moorland to the east, and Blanket bog and Peatland to the south and south-east. Rough grazing predominates along the west side, with more enclosed pasture of variable quality to the north. Blanket bog and Upland heathland are present in the open upper areas of the plan. Bracken is more dominant in lower areas.

Open Water

There is no open water within the forest. Black Loch and Crosshill Loch border the forest.

II/3.6.4 Invasive species

Rhododendron spreads in from the cemetery, which is an issue in the north-eastern corner of the forest. Gorse is an issue on the adjoining farmland.

II/3.6.5 Pests and diseases

No pests or have been identified to date. Tree health issues noted to date are confined to *Phytophthora ramorum*.

II/3.7 Landscape

II/3.7.1 Landscape character

SNH's Landscape Character Assessment (Landscape Assessment of Argyll and the Firth of Clyde, Review No. 78, 1996) puts the area within the 'Upland Forest-Moor Mosaic' landscape type. Its key pertinent characteristics include:

- Upland plateau with rounded ridges, craggy outcrops and an irregular profile
- Upland lochs
- No field boundaries
- Very few buildings; occasional isolated dwellings on edges of moor
- Little access

Of particular note is the strong contrast between the bare, dark moorland and steep-sided fissured gullies of the moorland, with the rolling farmland with arable or pasture field enclosures, demarcated by fences or gappy wind-sculptured hedges to the north and west. The landform around Beinn Ghuilean is strong, but the landscape scale is relatively small, with a diverse mixture of textures and colours.

II/3.7.2 Landscape designations

There are no landscape designations affecting the forest area.

II/3.7.3 Visibility

The forest is widely visible from public roads to Campbeltown approaching from the north (A83 and B842). It is visible from many properties in the town and from open areas, such as the recreation ground. Changes to the forest resulting from clearfelling or road construction are therefore prominent. The forest was the subject of a detailed landscape design in 1978. Its principles were largely followed in the subsequent afforestation; keeping skylines clear of trees, planting larch on bracken-covered areas and spruce in the hollows. However, some of the finer details were lost, with shapes being squared off and blocky. Differences in vegetation resulting for management have also caused issues, such as where strong bracken growth on FLS land highlighting the fence line on the north-eastern side.

Forest walk trails crossing open ground were highlighted at construction by the strong colour contrast between the light-coloured substrate of the podzolized soils and the dark heather vegetation. Use of a darker surfacing material next time was also recommended. Locals also refer to the 'Goat,' a feature allegedly lost following planting. However, it was a shape outlined by natural heather growth on a steeper face, which in fact remained unplanted, but has probably reduced in prominence over time due to changes in vegetation resulting from decreased grazing.

A community survey in 2003 raised a number of points, with landscape being a concern amongst adults. Feedback included; appreciation of autumn colours; dislike of the visibility of the newly constructed path surface; a desire for more open space; concern about the visibility of clearfelling, tidying up sites after clearfelling and following path construction; and hard edges.

II/3.8 Social factors

II/3.8.1 Recreation

Tourism

Tourism is important to the Campbeltown area, centered on the town and communication routes. The woodland itself is not a tourist destination. Various tourist facilities and features exist, particularly in the town. The Mull of Kintyre is a popular tourist destination. A pedestrian ferry service runs to Northern Ireland. A summer ferry service runs to Ardrossan. Campbeltown airport (Machrihanish) provides services to Glasgow.

Making access easier

The forest is within walking distance of the southern part of the town and within 600 m of the high school over private ground. Core paths follow established routes in past the cemetery and Narrowfield Farmhouse. A network of paths and mountain bike trails exist in the forest, but the forest is otherwise difficult to walk though due to rough, steep terrain, unbrashed trees and tall bracken. The first footpaths were built in the 1990's. The first mountain bike trail was built in 2006. Various issues have occurred with the trails over time, including issues with loose large stones, erosion to steeper sections and to the side ditch, dog-fouling and litter. There are no All-Ability trails. The existing trails are variable in grade. Additional trails have been constructed by a local mountain bike club.

Other issues are external to the forest area, including safety concerns about walkers using Crosshill Loch weir; issues with livestock on the access routes; and lack of parking facilities. Access to the Piper's Cave from the forest area is not aided by the lack of access through or over the FLS march fence. The summit of Beinn Ghuilean is a popular viewpoint, but there are no formal paths to it.

Recreation

There are no established Visitor Zones within the forest but outline Welcome Zones where access routes enter the forest have recently been drafted. These await further harvesting to develop them, primarily as open space. The forest constitutes a WIAT woodland. A few seats are provided along the trails.

II/3.8.2 Community

Community Engagement – Neighbours

Campbeltown Community Council covers the area.

Partnerships

There are no existing community partnerships associated with the forest. A partnership with the local mountain bike club is being discussed.

Community Ownership and management

A local community group expressed interest in acquiring the forest several years ago but was not taken forward.

II/3.8.3 Heritage (See maps 3.17 and 3.18)

There are no scheduled monuments in the plan area. A couple of scheduled crosses exist within the cemetery. There are no known unscheduled monuments in the plan area, apart from the site of an historic aircraft crash, of which there are no visible remains. The Historic Landuse Assessment mapping does not provide any additional information for the forest area. It identifies the area as 20th. C plantation woodland.

Policy - Archaeological features will be protected in accordance with the Forestry and Land Scotland's Archaeological Guidelines, and UK Forest Standard guideline 'Forests and the Historic Environment.' Standard prescriptions from the West of Scotland Archaeology Service include; leaving 5 meters either side of walls and linear features unplanted and 20-meter buffers around localized sites. Breaches in linear features will be kept to an absolute minimum. Other buffer zone widths are defined for each monument on the conservation plan and against the overlay key.

II/3.19 Statutory requirements and key external policies

Key external policies include: -

- Scottish Government policy on Woodland Removal
- Scottish government woodland expansion aspirations
- latest advice on tree diseases, species choice and biosecurity protocols (FLS Larch Strategy)
- measures to combat Climate Change (Climate Change (Scotland) Act 2009)
- Scottish Outdoor Access Code
- Community Empowerment Act (2015) (see FLS Community Asset Transfer Scheme (CATS)
- Wild Scotland Best Practice Guidelines
- Land Reform (Scotland) Act 2003

Nature Scot, SEPA and HES and are West Region's statutory consultees. Argyll & Bute Council and Scottish Water are also routinely consulted on plan revisions. The Community Council has been made aware of the plan revision proposals. Continuing community consultation was a requirement of the felling permission of 2019. The Consultation Record provides a summary of all formal correspondence, issues raised and FLS responses (see Appendix II).

Appendix III: LMP Brief and Introductory Information for the Internal Stakeholder Meetings

(Outcomes from Initial Stakeholder Meeting and internal consultations added in italics) (Notes, plans and quantities refer to the design as prepared for the Internal Stakeholder Meeting held in July 2022) (Note – proposals and outcomes noted at the Internal Stakeholders Meeting have subsequently become dated due to more recent SPHN's and community aspirations).

Introduction

The plan for Beinn Ghuilean covers 144.0 ha. It is located about 1 mile south of Campbeltown town center. The forest was planted with both a commercial and visual amenity focus. The forest

is highly visible from the town and surrounding area, including road and ferry routes. There is modest community interest in its appearance and use for recreation purposes, including some community group involvement. The forest is adjacent to Crosshill Loch reservoir to the north and is otherwise bounded by enclosed and unenclosed land used for grazing livestock. Road access is via Tomaig Road and then across farmland. Pedestrian access is gained both formally and informally from points along the northern side. Campbeltown cemetery borders the north-eastern corner.

The previous plan was approved in 2007. Under this plan, the following objectives were noted and their outcomes now assessed: -

Table II/2.1 Table showing Objectives, Achievements/changes and Relevance to Plan Revision

Objectives	Achievements/Changes	Relevance to the plan revision
Build forest road	Completed in 2016, TTMP in place for Tomaig Road.	Allows timber haulage with conditions.
Adopt CCF over 48 ha.	Not achieved due to lack of thinning caused by late road access construction.	Will be relevant to second rotation on lower slopes.
Modify edges and shapes to reduce geometric appearance and integrate into surrounding landscape.	Clearfelling in response to SPHN's has removed some shapes, but lack of thinning prevented proposed modifications.	Will now be achieved via the second rotation design.
Increase broadleaves within the plan area to 15%.	No broadleaves have been planted as CCF and new planting not implemented.	Will now be achieved via the second rotation design.
Expand, improve and diversify recreation routes/facilities within the forest. Encourage community participation.	Routes have instead been declassified and no further FLS investment made due to priorities elsewhere. The local mountain bike group have introduced a number of wild trails and	Aspirations and input of the local community and community groups will be relevant to decisions about future recreation access provision.

Objectives	Achievements/Changes	Relevance to the plan revision
	are in discussions about formal agreement with FLS. Changes to path surface not implemented.	
Construct 5.8 Km of multipurpose access tracks.	No tracks built for CCF management as CCF proposals abandoned. One track built as part of access to SPHN felling.	May still be relevant for SPHN's. Will be relevant for restocking.
Reduce deer numbers and create deer lawns.		
Enhance Black grouse habitat by undertaking heather management and respacing of poorly grown conifers.	No done due to priorities elsewhere.	Conifer removal may impact on Black grouse habitat in the short term. Habitat management may be affected by peatland restoration in new plan.
Protect reservoir water catchment through establishment of permanent vegetation in riparian buffers.	No additional space created through CCF to establish permanent woodland.	Protection of water quality is a top priority in the new plan.
Fell 5.3 ha coupe in Phase 2	Road built to access, but not done. Issues with small scale.	No longer suitable within the new plan.
2.1 ha of new planting on eastern edge.	Did not take place.	Partly relevant to alter shape of external forest edge.

A number of unfulfilled opportunities were also identified; control rhododendron; restructure the forest; and explore possibility of creating a visitor car park.

The existing crop and silvicultural potential

The forest was planted in 1979, so is uniform in age, with height differences reflecting only difference in growth rates and species choice. There has not been any crop assessment since

2003. Growth rates are poorer higher up on the wetter and more exposed areas. Equal amounts of Sitka spruce and larch were planted in pure blocks, with smaller amounts of Lodgepole pine and some amenity broadleaves along the lower edge and gullies. Stocking density of higher altitude larch areas is poor. Larch form is only fair to poor. Lodgepole pine provenance appears to be South Coastal, with some collapse and poor form noted. Felling of larch due to *Phytophthora ramorum* under SPHN's with additional felling for access, coupe consolidation and ahead of peatland restoration is ongoing. Poorer crops will be mulched. ESC suggests lower areas offer potential for a variety of species. The remaining crop is past its thinning window. The larch element is likely to become infected with *Phytophthora ramorum.*

Access

The forest road access was built in 2016 from Narrowfield Farm. The associated public road, Tomaig Road, is subject to a Timber Traffic Management Plan. The forest contains several footpaths, some classed as Core Paths, accessed primarily via a path beside the cemetery. They are of variable grade and none classed as All-Ability. These trails have been delisted. The lower woodland area contains a number of unofficial mountain bike trails. Vehicular access to upper parts of the forest does not exist and would be difficult to achieve given landform and visual constraints. Access from the forest to external walking destinations, such as the Piper's Cave and Beinn Ghuilean summit are not facilitated through the provision of paths or styles over fences.

Natural environment and wildlife

There are no designated sites or Ancient Woodland sites in or close to the forest. Deep peat is present in the upper areas, some of which is under low yield class conifers due to be mulched following plan approval. Broadleaves are confined to planted species along the lower edge of the forest and some regeneration along riparian areas. Rhododendron has invaded the north-east corner from the cemetery. Grouse and ravens are seen in the area. Hen harriers may use upper areas based on observations within the adjoining open moorland. Roe deer are present in the forest. Dragonflies use the lochs.

Landscape

The forest falls within the 'Upland Forest-Moor Mosaic' landscape character type. There are no landscape designations covering the area. The forest is highly visible from the town, main roads and ferry routes. Landscape scale has been assessed as relatively small, with some sharp contrasts present between darker, heather dominated areas, lighter bracken covered areas, surrounding improved pasture, dark spruce and lighter larch. The community has raised general

concerns about the appearance of felling sites are harvesting, visibility of newly constructed paths and hard edges, whilst appreciating autumn colours and open space.

Cultural environment

There are no scheduled or unscheduled monuments in the forest, although there is an aircraft crash site.

Community use

A local mountain bike group is actively involved in trail-building in the forest and is in discussions regarding formalizing their involvement in the forest. The High School has been active in picking up litter in the past. A community group looking to manage the forest was on the go for a while a few years ago but came to nothing. The woodland falls into the WIAT boundary but has not benefited from this to date.

Neighbouring reservoirs/fisheries

Anglers use the reservoir. The reservoir serves two local distilleries and a builder's yard. Much of its catchment falls within the forest (65%), enhanced by various ditches and pipes feeding into the area. The reservoir is known to flood. Spates on feeder burns have caused erosion and damaged to recreational infrastructure in the past.

Issues

1. Final extension to existing plan expired on 31/01/2022.
2. Two SPHN's have impacted on the eastern half of the forest (*three as of 1st December 2022)*
3. Conditions were attached to the SPHN approved on 15/11/2019:
    a. Approval expired with the final plan extension.
    b. Any changes to restocking to be approved under the new plan.
    c. Community consultation to be ongoing throughout operations.
4. Mulching of uneconomically harvestable conifers under a felling amendment associated with the first SPHN has not taken place and permission has now expired.
5. Remaining larch is at high risk of infection.
6. Larch and ash cannot be planted due to disease.

7. Remaining mature confers are at greater risk of wind damage from westerly winds following felling of conifers to the east.
8. New policy guidance on peatland restoration for carbon capture will affect upper parts of the forest.
9. The TTMP imposes restrictions on timber haulage.
10. *Clearfelling has some negative visual issues; may restrict access to the forest and alter public use of the forest; but creates other opportunities.*
11. *Significant number of wild mountain bike routes have been created.*
12. *Two distilleries use water from Crosshill Loch reservoir.*
13. *No agreement to progress the proposed excambion along the eastern edge, having stalled over legal terms.*
14. *Conflicts between pedestrian and bike users.*

Plan objectives

The role of Scotland's National Forest Estate focuses on 6 key themes: -

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

The plan will deliver on these themes in the following ways: -

Healthy

1. Increase resilience to Climate Change through species diversification.
2. Avoid using disease-prone species in the design.
3. Implementation of Deer Management Plans.
4. Area managed under LISS will be increased.

Productive

1. Timber production – commercial conifer areas.

2. Timber production – Explore productive hardwood options when crops are mature, including local markets.

Treasured

1. Improvements to Visitor Zones.
2. Landscape improvements through species diversification and redesign.

Accessible

1. Take into account aspirations of local /community groups.

Cared for

1. Enhancement and protection of habitats.
2. Landscape improvement that responds to landform and respects natural features.
3. Development of habitat networks.
4. Contribution to the 20% target for broadleaved woodland cover (*now increased).*

All themes

1. To comply with UKWAS guidance for certification.
2. To comply with UKFS.
3. To comply with all other relevant guidance and policies, Strategic Plan and overarching FLS plans.

Summary of proposals

The Beinn Ghuilean LMP revision seeks the following outcomes: -

Economic context

1. Approval for 101.3 ha of felling, to be completed within the plan period, and 84.6 ha of restocking by natural regeneration is being sought, for completion within 10 years of felling.
2. Timber production from felling yielding (*now no longer applicable).*

3. Construction of a new access tracks requires EIA approval for 2.2 Km of new track and felling approval for 3 ha of associated felling within the first five years of the plan (*no longer required)*.

Environmental context

1. Creation of habitat networks design framework for the woodland.
2. Peatland restoration.

Social context

1. Implementation of measures commensurate with its designation as a WIAT Woodland, primarily associated with landscape enhancement and access provision, through appropriate design. Desire lines for future forest walks will be looked at.
2. Protection of the reservoir water supply through design of adequate riparian buffers.

Stakeholder consultation

In addition to West Region's statutory stakeholder's (SNH & Argyll & Bute Council), SEPA is routinely consulted. Scottish Water has been consulted in relation to the public water supply. The RSPB, Confor and SSE have also asked to be routinely consulted. Campbeltown Community Council will be consulted. Neighbours, where identifiable, will also be consulted. A drop-in public consultation exercise will be held when draft proposals have been prepared. Information will be posted online on the FLS website at various stages of the plan development, with the approved plan eventually being made available here.

Appendix IV: Glossary

Abbreviation	Description
ASNW	Ancient Semi-natural Woodland
ATC	Alternative to clearfell management
BAP	Biodiversity action plan
CATS	Community Asset Transfer Scheme
CCF	Continuous cover forestry
Confor	Confederation of Forest Industries (UK)
DMP	Deer Management Plan
ESC	Ecological Site Classification
FCS	Forestry Commission Scotland
FD	Forest District
FLS	Forestry and Land Scotland
FDP	Forest Design Plan
HAP	Habitat action plan
HLA	Historic Landuse Assessment
HS	Historic Scotland
LIFE	Financial Instrument for the Environment
LISS	Low Impact Silvicultural System
LMP	Land Management Plan
Nature Scot	Nature Scotland, formerly SNH
NFE	National Forest Estate

Abbreviation	Description
PAWS	Plantation on Ancient Woodland Sites
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monument
SF	Scottish Forestry
SNH	Scottish Natural Heritage
SDA	Stocking Density Assessment
SOAC	Scottish Outdoor Access Code
SPA	Special Protection Area
SPHN	Statutory Plant Health Notice
SSSI	Site of Special Scientific Interest
STTF	Scottish Timber Transport Fund
UKFS	UK Forestry Standard
UKWAS	UK Woodland Assurance Scheme
WAFD	West Argyll Forest District
WoSAS	West of Scotland Archaeology Service
WR	West Region
YC	Yield Class

Species abbreviations	
Species	AR = Alder BI = Birch (downy/silver) CAR = Common Alder DF = Douglas Fir EL = European Larch HAW = Hawthorn GF= Grand Fir GWL = Goat Willow HAZ = Hazel HL = Hybrid Larch JL = Japanese Larch LP = Lodgepole Pine MB = Mixed Broadleaves SS = Sitka Spruce MC = Mixed Conifers MCP = Macedonian Pine NBL = native broadleaves (including SP where suitable for conservation) NF = Noble Fir NS = Norway Spruce OK = Oak (robur/petreae) RC = Western Red Cedar ROW = Rowan SP = Scots Pine

Species abbreviations	
	SS = Sitka spruce WCH = Wild Cherry / Gean WH = Western Hemlock XL = Larch XWL = Other Willows

Appendix V: Provenance guide chart

Species	Guidance
SS	Improved QSS standard throughout
VPSS	Limited use in best locations
SP	High rainfall type specified as standard
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
XC	PSSB will advise on any other minor species

Species	Guidance
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.	

Appendix VI: Programme summary from the main proposals 2024 – 2033

Operation type	Period	Program quantities	Comments
Total plan area	144.0 ha	Plan period 2024 to 2033	
Felling (conifers)	**Phase**	**Area**	**Comments**
Beinn Ghuilean	1	42.9	Excludes previously approved and SPHN's.
Beinn Ghuilean	2	-	-
Restocking	**Phase**	**Area**	**Comments**
Beinn Ghuilean	1	46.0	Mostly planted
Beinn Ghuilean	2	-	
Road construction	**Phase**	**Length (Km)**	**Comments**
Beinn Ghuilean	1	-	-
Beinn Ghuilean	2	-	-
Road maintenance	**Phase**	**Details**	**Comments**
Forest road	1 & 2	0.94 Km	During and after operations
Deer Management/fencing	**Year of project**	**Length/details**	**Comments**
None at present, but significant amount of fencing nearing end of life	5?	3850	East side march fence replaced in 2011. Multiple ownerships an issue.
CVS projects	**Year of project**	**Details**	**Comments**
None at present			

Operation type	Period	Program quantities	Comments
Environment projects	**Year of project**	**Details**	**Comments**
Peatland restoration of conifer areas	Phase 1	7.1 ha	Conifers to be mulched. Some subsequent drainage blocking and stump overturning.
Peatland restoration on existing open hill	Phase 1	11.8 ha	Mainly drain blocking
Other projects	**Year of project**	**Details**	**Comments**

Appendix VII: Beinn Ghuilean Deer Management Plan

Deer Management Plan (DMP) (Internal)

Background

- This DMP should be used as a supporting document/annex for the Land Management Plan (LMP). The DMP should also relate/be used in conjunction with FLS Deer Management Strategy.

National & Local objectives

- Local and National objectives should be linked in here.
- National
    - Contributing to Scottish Forestry - Forestry Strategy (also includes Climate Change)
    - Deer Management Strategy Deer management strategy - Forestry and Land Scotland
    - Scottish Biodiversity Strategy Biodiversity strategy: consultation - gov.scot (www.gov.scot)
- Local
    - No local policy documents at present

What are we going to protect?

- Provide a broad overview of the type of trees and environment that the DMP will seek to protect.
- Reference section in LMP.

Deer Species (and other herbivores/feral pigs)

- Roe deer are only deer present

What have we done to date?

To date culling has been carried out by FLS ranger. Out of season has been infrequently necessary and only in the 21/22 and 22/23 seasons has the use of night shooting been exploited as permitted by the clear felling operations.

The forest has boundary stock fence and Roe deer move into and out of forest regularly. Given the high level of public access, deer fencing is not a sensible option.

Historic Culls

	MALE	FEMALE	KIDS
2019/20	0	0	0
2020/21	2	3	1
2021/22	6	4	3
2022/23	9	2	1

There has been no restocking to monitor impact on since establishment.

Culling will remain the primary method of control and will be carried out by FLS staff in the foreseeable future. Boundary fences should be regularly inspected to ensure livestock are kept out.

Geography

- The terrain is typical upland conifer rising from Crosshill loch. With public access being high, there has been no tracks constructed for carcass extraction (apprehension being any

such tracks would be exploited by mountain bikers). As Roe deer rarely exceed 20 kg, there are no major issues in this regard.

Have an evidence-based approach

The last formal survey of deer usage/population density was conducted by Strath Caulaidh in 2018/19. Their data has been used as a basis for the Population model but required interpretation/modification as the survey area included other forest blocks with mixed deer species and was not applicable in its entirety to Beinn Ghuilean.

Future collection of evidence surveys will be conducted using a mixture of drone counts, population assessment from dung defecation and Impact Assessments on restocked coupes.

Link to Deer Dashboard

- Most of the data is used to create this DMP can be found in the Deer Dashboard

Population Modelling and Future Culls

Beinn Ghuilean - Deer population data				
Year 1 EUD Km2 @ 1st April	12.9			
Start Yr Population 1st April	18.576			
Area (ha)	144.0			
Cull Target				
Yr	**Female**	**Male**	**Total**	
Yr 1	0	0	**0**	
Yr 2	0	0	**0**	
Yr 3	2	4	**6**	
Yr 4	5	8	**13**	
Yr 5	3	9	**12**	
Yr 6	5	2	**7**	
Yr 7	5	2	**7**	

Beinn Ghuilean - Deer population data				
Yr 8	4	3	**7**	
Yr 9	4	3	**7**	
Yr 10	4	3	**6**	
WMU Population				
Financial Year (FY)	**Population 1st March**	**Population 1st March**	**Total Population**	**No per 100 ha 1st April**
Yr 1	12	12	23	**16.1**
Yr 2	14	14	29	**20.0**
Yr 3	16	14	30	**20.7**
Yr 4	15	10	25	**17.1**
Yr 5	16	4	20	**13.9**
Yr 6	14	6	21	**14.4**
Yr 7	14	7	21	**14.5**
Yr 8	13	8	21	**14.3**
Yr 9	12	8	20	**14.0**
Yr 10	11	8	19	**13.5**
Species Population	**Red**	**Roe**	**Sika**	**Fallow**
Yr 1	0	23	0	0
Yr 2	0	29	0	0
Yr 3	0	30	0	0
Yr 4	0	25	0	0
Yr 5	0	20	0	0
Yr 6	0	21	0	0
Yr 7	0	21	0	0

Beinn Ghuilean - Deer population data				
Yr 8	0	21	0	0
Yr 9	0	20	0	0
Yr 10	0	19	0	0

Protection Options – cull/fence/tubes

Culling using FLS staff is currently the most viable and efficient protection option. Black grouse are present, and fencing is not an option given high demands for access by public.
Using tree shelters has not been very successful in the past

How will objectives be met? Staff, contractor?

Future control will be using FLS staff – public presence is high, and cull is relatively low.

Infrastructure? Roads/ATV tracks/glades/larders/equipment

As described elsewhere there is good road access into the forest, whilst the topography affords limited scope for construction of ATV tracks. Given public access, stalking is conducted as low key as possible.
Future restocking should make provision of open spaces for deer control. This is essential given the high vulnerability of proposed tree species to deer browsing. In the immediate future the larder in Campbeltown (2 miles away) will remain the default larder.

Collaborative working opportunities

Collaborative deer management should be at landscape scale if possible. A recent woodland creation scheme being managed by Scottish Woodlands may provide opportunities for this. Otherwise, neighbours have varying sizes of agricultural properties and with no deer control policy. Larder sharing is not currently appropriate given the limited size of both the preparation and chill rooms.

DMG present

Currently there is no active Deer Management Group operating in the area.

Venison

- FLS subscribe to the Scottish Quality Wild Venison scheme.
- All venison is quality assured and sold to Highland Game
- Snipefield larder in Campbeltown is the predominantly used larder. Cairnbaan in Lochgilphead is the next fall back but is some 60 miles away.

Appendix VIII: Timber Traffic Management Plan – Tomaig Road

Argyll Timber Transport Group.

Timber Traffic Management Plan: UC no. 057 Tomaig road, Campbeltown

This Timber Traffic Management Plan (TTMP) has been prepared so that the structure of the roads named and associated verges and kerbs are protected during timber haulage and operations associated with in- forest road construction or upgrading while preserving them for the use of local residents, agriculture and other forestry users. The purpose of this local agreement is specifically to ensure that reasonable access is maintained for the forestry owner/s and their neighbours, but in a sustainable fashion and in accordance with regional and national forest strategies. Refer to www.argyll-bute.gov.uk/transport-and- streets/timber-transport

Pre-conditions: The following schedule relates to the sensitive Council road No 057 Tomaig road, (from forest access to its junction with the B842 Witchburn Road, Campbeltown) which is designated as a consultation route in this area. This road has a thin construction which has been susceptible to deformation in the past causing damage to the surface. Proposed haulage operations must be discussed with the council at least one month in advance of commencement, especially if shipping via Campbeltown Pier proposed.

Lorry Configuration: 3 axle CTI equipped wagon and drag vehicles, 44 tonnes GVW with twin wheel or maxi tyre units only. The use of super single tyre units is prohibited. The use of full-length articulated trailer units is not permissible due to the added risk of verge/kerb over-run and edge damage associated with the longer swept paths.

Frequency & Timing: The loaded vehicle pass frequency on this road will be no less than one hour, maximum of eight vehicles per day, to allow a degree of carriageway recovery. Increase to this frequency only on consultation with the A&BC Technical Officer for MAKI. An assessment of the road and weather conditions, in conjunction with any additional mitigation measures will determine potential increase.

Seasonal & Weather Condition Restrictions: Haulage here is normally restricted to the summer months (May to Sept,) to avoid freeze/thaw/ waterlogged conditions to which this road is

particularly susceptible. Given the time sensitive nature of the SPHN (Statutory Plant Health Notice) and following consultation with the Area Roads Team, exceptional use of the route is permitted in January to April. This on the condition that operations must be suspended during periods of thawing or in conditions of continuous heavy rain or lying snow.

Driver Awareness & Speed Limits: Drivers must be familiar with the road & should have read & be in possession of this agreement prior to operating on the route. The maximum speed (loaded or empty) should be restricted to 15 mph, reduced to 10 mph in the residential area. This may be further reduced during excessively wet periods. Following discussion with the local RPU, no restrictions are placed on timings, however due consideration must be given to pedestrians. Where practicable, haulage operations should take place during times of low pedestrian use. This will be monitored & reviewed as appropriate.

Monitoring & review: Road conditions are subject to periodic inspections by Council staff during the period of operations. Parallel inspections by the ATTG Project Officer will be carried out when practicable. Any deterioration of the road surface observed by interested parties (hauliers, landowner, agents etc.) must be notified to the local Council Roads Operations office as soon as practicable.
Haulage should be suspended immediately if there is any doubt that significant damage is evident or likely to occur and only resumed after consultation with A&BC Technical Officer- MAKI.

Prepared by ATTG / Council; Date: Jan 2020
Name ATTG: Iain Catterwell, Regional Project Officer.
Name A&BC: Stuart Watson, Traffic & Development Manager

Appendix IX: Supplementary Information

Available for inspection at:

West Region
Whitegates
Lochgilphead
Argyll
PA31 8RS
Tel: 0300 067 6650

Documentation includes: -

- roadline surveys
- Production Forecast
- Sub-compartment database
- Landscape Character Assessment by Nature Scot
- forestry guidelines
- Recreation Plan
- Scottish Forestry approval procedures
- soil surveys

Appendix X: Advice on reservoir catchment protection from Tom Nisbet (Forest Research)

1. The 20% catchment limit on felling is essentially about managing the risk of felling impacting on water quality. This 'rule of thumb' derives from a range of catchment studies that have found felling <20% of a catchment to have little or no detectable impact on water quality or quantity. That is not to say there is no effect, only that it is small and cannot be detected above background variation and within measurement errors. Crop removal inevitably disrupts nutrient cycling and increases water runoff, enhancing nutrient leaching and potentially sediment entrainment (acidification is not an issue in the area). Increasing the proportion of the catchment felled beyond 20% can be expected to further increase nutrient and sediment inputs to water and while the raised levels are very unlikely to breach water quality standards, it is obviously desirable to minimise changes within sensitive catchments, such as water supplies.
2. The three-year time limit is based on nutrient and sediment losses being greatest in the first few years after felling, when the release of nutrients and increase in water runoff are highest, reflecting the temporary bare condition of the site.
3. Felling above the 20% catchment limit within three years will not result in a step change in nutrient or sediment concentrations, but a gradual rise in concentrations. Therefore, the impact on water quality of increasing the scale of felling to 25% or 35% of a catchment is likely to remain relatively small but potentially large enough to be detectable and less welcome in terms of preserving the highest water quality. The present status of the water quality and the level of water processing/treatment will determine whether a small, moderate or large breach of the 20% felling limit poses an issue. This is best discussed with the water users.
4. As you note, chemical and oil spills probably pose the greatest threat to water users in view of the potential to contaminate and taint the water supply. Thus, particular care will be needed with the handling of these substances, including in connection with vehicle refueling and machine maintenance. It would be best to avoid refueling and the storage of chemicals and oils within the catchment, as well to have an updated contingency plan in place.
5. The above assessment assumes that good harvesting practice will be adopted, including measures to minimise soil damage and sediment entry to water. As you will be aware, a small/localised area of damage to watercourses or riparian zones can result in marked sediment pollution, especially where clays are present.

Appendix XI: SW List of Precautions for Drinking Water and Assets Forestry EdC

Annex 1: Precautions to protect drinking water and Scottish Water assets during forestry activities

General requirements

1. If you are aware the activity is taking place within a drinking water catchment the proposed timing of the works, including planned start and completion dates, should be submitted to Scottish Water 3 months in advance of any activities taking place on-site. This information should be submitted to **protectdwsources@scottishwater.co.uk.**
2. If a connection to the water or wastewater network is required, a separate application must be made via the Scottish Water Development Operations Team Portal for permission to connect, this can be found at Scottishwater/portal. It is important to note that the granting of planning consent does not guarantee a connection to Scottish Water assets. The Development Operations Team can be contacted by telephone on 0800 389 0379 or via email at **developmentoperations@scottishwater.co.uk.**
3. In the event of an incident occurring that could affect Scottish Water we should be notified without delay using the Customer Helpline number 0800 0778 778 and the local contact if known.

Protecting drinking water quality

Regulatory requirements

4. Scottish Water is required to ensure that any activity within a drinking water catchment does not affect the ability of Scottish Water to meet its regulatory requirements.
5. Water Treatment Works are designed to treat the specific parameters of the raw water source they receive (i.e., the specific chemical, biological and other characteristics of natural, untreated water). If the characteristics of the raw water change or deteriorate, it can affect the ability of the works to supply drinking water to customers at the required standards.
6. The regulations relating to the quality of drinking water supplied by Scottish Water are the Public Water Supplies (Scotland) Regulations 2014 as amended. Quality Standards are derived from the European Drinking Water Directive 98/83/EC.
7. Drinking water catchments feed Scottish Water abstractions which supply water to water treatment works. Under Article 7 of the Water Framework Directive, waters used for the abstraction of drinking water are designated as Drinking Water Protected Areas (DWPA). The objective of the Water Framework Directive is to ensure that no activity results in the

deterioration of waters within the DWPA. If an activity falls within a DWPA or drinking water catchment, it is essential that water quality and quantity are protected.

Specific precautions for drinking water protection during forestry activities

8. Locations where public water supplies may be vulnerable should be identified in the site forest plan and the environmental risk assessed in the accompanying application and/or documents relating to the forestry works.

9. Any potential effect on the hydrology of the area resulting from the forestry activity should be assessed and the findings presented in the application and/or documents relating to the forestry works. This should include consideration of natural and man-made drainage patterns, base flows/volume, retention/run-off rates and potential changes to water quantity. Any required mitigation measures and proposed monitoring should also be detailed.

10. When constructing roads, drainage ditches and trenches, drainage should not be directed into adjacent catchments but retained within the existing catchment.

11. It is recognised that forests can assist with the protection of water quality. However, there can also be potential large-scale impacts such as sediment delivery, nutrient enrichment, fuels oils/lubricants, pesticides, fertilisers, etc. from poor forestry operations. Sediment can discolour water and have a high content of nutrient, carbon, metal (such as iron and manganese) or pesticide, which can seriously interfere with water treatment. Any alterations to the pH of the watercourses e.g., old fashioned land drains in peat directly connected to watercourses within the catchments could also impact on the treatment works. Alterations to water quality can lead to a failure of microbiological and chemical water standards. Any potential pollution risk which could affect water quality should be considered and mitigation measures must be implemented to prevent deterioration in water quality and pollution incidents.

12. If the catchment is deemed susceptible to acidification a catchment-based critical load assessment may be required. This will help protect water supplies from acidification and related effects on the solubility of aluminium and manganese.

13. Mitigation measures to prevent pollution to watercourses should be outlined in the application and/or required documents for the forestry work prior to work starting onsite. Any mitigation measures implemented should be checked regularly, maintained and improved if deterioration in water quality or potential pollution pathways occur.

14. Sustainable drainage (SUDs) options should be considered, such as settlement ponds and designated filtration areas.

15. If helicopters are being used for any reason you must detail this within the submitted documentation. We would request that no refueling takes place within the catchment where possible. If not possible, please provide as large a buffer as you can from the watercourse and certainly no less than the 50 m, locate equipment on a level area sloping away from the

watercourse and have spill kits available. Flying directly over the source should be avoided, where possible.

16. Watercourses that feed into any watercourses or reservoirs that Scottish Water abstracts from should be considered when developing new road or access infrastructure. Any crossing of these watercourses should be kept to a minimum. Pollution prevention measures should be put in place at each crossing point and silt traps, or equivalent, should be installed at regular intervals to minimise the risk from pollution.

17. Once constructed, site roads and access routes should be regularly maintained to ensure minimal erosion, and hence run-off and pollution, from the road surface. Avoid using material resulting in metallic, sulphide-rich or strongly acidic polluted water run-off, ideally using inert materials with low erodibility.

18. Restoration or reseeding of access routes should be considered as routes can become degraded as work progresses.

19. No refueling or storage of fuel or hazardous materials should take place within the drinking water catchment area. If this can be demonstrated to be impracticable, then the appropriate Pollution Prevention Guidelines (PPGs) or updated Guidance for Pollution Prevention (GPPs) should be followed. This includes, GPP 2: Above ground oil storage tanks, GPP 5 Works and maintenance in or near water, PPG 6: Working and Construction and Demolition Sites, GPP 8: Safe storage and disposal of used oils, GPP 21: Pollution incident response planning and PPG 22: Incident response – dealing with spills. Rather than 10 m buffers from watercourses, we would request 50 m buffers are applied to watercourses and 50 m applied to spring, well or borehole. Oil storage should be in accordance with The Water Environment (Oil Storage) Regulations (Scotland) 2006. There should be dedicated oil storage areas created. Spill kits should be located within all vehicles, plant and high-risk areas, as well as the consideration and use of nappies and booms.

20. Welfare/wastewater facilities should preferably be located outside the drinking water catchment. If not practicable, then portable toilets should be used and waste disposed of off-site.

21. All waste must be removed safely from site for the required treatment and disposal.

22. Any proposed abstractions for activities such as welfare facilities or cement batching plants should be detailed in the application and/or documents for the forestry works, which should be done by agreement form SEPA.

23. Induction training should be given to all personnel on-site and should include Scottish Water site sensitivities in relation to drinking water catchments and assets (see below), as well as spill response as outlined in PPG 22: Dealing with spills.

24. Applications and/or other required documents for the forestry work should include the Scottish Water Customer Helpline Number 0800 0778 778 and the local contact details.

Protecting drinking water in peatland areas

25. When peat is present within the proposed area of activity the application and/or other required documents for the forestry work should include an assessment on the potential release of colour and dissolved organic carbon quality as a result of changes to hydrology and/or physical disturbance which can affect drinking water supplies.

26. The following guidance should be considered in areas of deep peat (peat exceeding 50 cm in depth);

- Forestry on peatland habitats, Guideline Note July 2000
- Deciding future management options for afforested deep peatland, Forestry Commission Scotland, 2015.

27. Ground disturbance in areas of deep peat should be avoided. The use of brash mats can be effective in protecting soil. Brash should be kept clear of watercourse, ditches and buffer areas. Brash left on site can affect soils and water, and result in nutrient enrichment. The short- and long-term overall effect and management for each site should be taken into account. The most current best practice guidance should be used.

28. The natural hydrology within peat should be maintained and/or restored. Any necessary measures to maintain natural drainage of peat and sub-surface hydrology, such as tailored drain spacing on access tracks, should be implemented as part ofany design.

29. Scottish Water requests that, where possible, access tracks in the drinking water catchment are constructed as floating tracks with adequate provision for maintaining existing drainage patterns.

30. Exposed soils and peat can release sediment, colour and dissolved organic carbon. The use of geotextiles, turf replacement and/or reseeding, should be undertaken as soon as possible.

31. Restoration of any degraded peat should be considered for areas within the drinking water catchment.

32. Turves should be carefully removed and stored vegetative side up so they can be placed back over any excavated soils to ensure the soils surface stabilises and recovers as quickly as possible.

33. Any historic drains or ditches within the site boundary that discharge directly to a watercourse in the drinking water catchment should be blocked and slowly discharged to a buffer area in line with current Forestry and Water Scotland Know the Rules Booklet. Where possible, this should be undertaken in advance of any work being carried out on-site, to provide protection for watercourses during site activities.

Monitoring requirements to protect drinking water quality

34. During forestry activities, daily visual assessments of the watercourses, flow conditions, prevailing weather and any other pertinent observations, will be required and recorded by the site manager or delegated authority.

35. Depending on the vulnerability of the public water supply, Scottish Water may request for a sampling program to be undertaken and for the sampling parameters to be agreed with Scottish Water.

36. Site inspection / monitoring records should be taken and made available if requested.

37. The Contractor should have relevant knowledge and experience to provide advice and monitor compliance with protection measures for the protection of water quality in relation to abstractions for water supply.

38. Depending on the vulnerability of the public water supply, Scottish Water may request that a dedicated Environmental Manager be appointed and present on-site to assess and monitor any effects caused by the activity.

Guidance documents

39. The current edition of the UK Forestry Standard, appropriate General Binding Rules under the Controlled Activities Regulations, and guidance provided by the Scottish Environment Protection Agency (SEPA) on pollution prevention should be adhered to.

40. Minimum buffer widths from forest edge to watercourses or abstraction points, as detailed within the UK Forestry Standard Guidelines, should be adhered to.

41. Forestry and Water Scotland also provides some useful guidance documents including forestry activities near Scottish Water Assets, information can be found at; https://www.confor.org.uk/resources/forestry-water-scotland/guidance-documents/

42. For information on sustainable drainage options CREW have produced guidance on Rural Sustainable Drainage Systems (visit https://www.crew.ac.uk/sites/www.crew.ac.uk/files/sites/default/files/publication/Rural%20SuDS%20Design% 20and%20Build%20Guide%20December%202016.pdf)

Protecting Scottish Water assets

43. If an activity associated with any third-party works is located within the vicinity of an existing Scottish Water asset, it is essential that these assets are protected from damage. To this end, the developer will be required to comply with Scottish Water's current process, guidance, standards and policies in relation to such matters.

44. Copies of Scottish Water's relevant record drawings can be obtained from the undernoted Asset Plan Providers. This is distinct from the right to seek access to and inspect apparatus

plans at Scottish Waters area offices, for which no charge is applied.

Site Investigation Services (UK) Ltd
Tel: 0333 123 1223

Email: sw@sisplan.co.uk
www.sisplan.co.uk

National One-Call
Tel: 0844 800 9957

Email: swplans@national-one-call.co.uk
www.national-one-call.co.uk/swplans

Cornerstone Projects Ltd
Tel: 0151 632 5142

Email: enquiries@cornerstoneprojects.co.uk
http://www.cornerstoneprojects.co.uk/index.php/scottishwaterplans

45. It should be noted that the site plans obtained via the Asset Plan providers are indicative and their accuracy cannot be relied upon.

46. It is recommended for EIA's, housing and mixed developments that the developer contacts the **Scottish Water Development Enablement Team** via the Development Services portal - **https://swastroprodweb.azurewebsites.net/home/default** for further advice if assets are shown to be located in the vicinity of the proposed development, and where the exact location and the nature of the infrastructure shown could be a key consideration for the proposed development. An appropriate site investigation may be required to confirm the actual position of assets in the ground. Scottish Water will not be liable for any loss, damage or costs caused by relying upon plans or from carrying out any such site investigation.

47. Proposals for Forestry, Hydro Projects, Mining/Quarries, Peatland Restoration and Utility Projects should be sent to the HAUC Diversions Team via the Development Services portal - **https://swastroprodweb.azurewebsites.net/home/default** for further advice if assets are shown to be located in the vicinity of the proposed development, and where the exact location and the nature of the infrastructure shown could be a key consideration for the proposed development. An appropriate site investigation may be required to confirm the actual position of assets in the ground. Prior to any activity commencing, all known Scottish Water assets should be identified, located and marked-out. Please note that Scottish Water records are

indicative only and it is your responsibility to accurately locate the position and depth of these pipes on site before preparing and submitting your plans. No intrusive site investigation works (e.g., trial holes) should be undertaken without written permission from Scottish Water.

48. Scottish Water requires Risk Assessment Method Statements (RAMS) and Safe Systems of Work (SSoW) to be prepared and submitted in advance to Scottish Water for formal review and acceptance. These documents shall consider and outline in detail how existing Scottish Water assets are to be protected and/or managed for the duration of any construction works and during operation of the development if relevant. These documents must be submitted to Scottish Water for formal prior written acceptance.

49. The developer shall obtain written acceptance from Scottish Water where any site activities are intended to take place in the vicinity of Scottish Water's assets. The relevant team can advise on any potential risk mitigation measures that may be required.

50. Scottish Water and its representatives shall be allowed access to Scottish Water assets at all times for inspection, maintenance and repair. This will also ensure that the Scottish Water assets are protected and that any Scottish Water requirements are being observed.

51. Any obstruction or hindrance of access to Scottish Water assets should be avoided. The prompt and efficient use and manipulation of valves, hydrants, meters or other apparatus is required at all times. There should also be no interference with the free discharge from water main scours or sewer overflows.

52. In the event of an incident occurring that could affect Scottish Water, including any damage to assets, Scottish Water should be notified without delay, using the Customer Helpline number 0800 0778 778, and the local contact if known. Scottish Water apparatus should not be interfered with or operated by anyone other than Scottish Water personnel.

53. Minimum Distances of Sewers/Water Mains from Buildings/Structures/other Obstructions – There are two critical issues relating to how close you can build to water mains and sewers.

    1. Scottish Water has a legal right of access in order to maintain and repair assets and there are minimum distances required in order to facilitate future SW access to water mains and sewers. No buildings, structures or any other obstructions that will restrict our access or put at risk the integrity of the assets is permitted within this distance.
    2. For pressurised pipes there is a recommended distance to be used in order to protect adjacent buildings and structures should the asset burst. This is the recommended distance to minimise the risk of damage to adjacent properties and structures in the event of a water main failure. It is suggested that this distance may include garden areas but should not include inhabited structures.
    3. The details of these requirements should be confirmed with Scottish Water as an early part of the design process.

54. Stationary plant, equipment, scaffolding, construction or excavated material, etc. should not be placed over, or close to, any Scottish Water assets without the prior written consent of Scottish Water which may be withheld depending on circumstances on-site.

55. Special care should be taken to avoid the burying of Scottish Water assets or the obstruction of sewers or manholes with fill or other material. Arrangements for altering the level of any chambers should be agreed in advance with Scottish Water and these should be constructed in accordance with Scottish Water requirements. The cost of any work to Scottish Water assets will be met by the project developer.

56. Excavation works (e.g., of wind turbine foundations) should not be carried out in the proximity of a water or wastewater main without due notice having been given to Scottish Water and prior written acceptance obtained. The developer will comply fully with any Scottish Water specific site requirements.

57. Any tree planting associated with the development (e.g., compensatory planting or screening etc.) should be undertaken in line with Water for Scotland 4th Edition 2018 and Sewers for Scotland 4th Edition 2018 to ensure that Scottish Water's assets are not put at risk by future growth of tree roots.

58. Vibration in close proximity to Scottish Water pipelines or ancillary apparatus should be managed in accordance with British Standard 5228-1:2009 (Code of practice for noise and vibration control on construction and open sites). The predicted levels of vibration should be agreed in advance with Scottish Water as part of the risk assessment and method statement and agreed vibration monitoring arrangements will be required.

59. The developer will consider the possibility of increased loading on Scottish Water apparatus and measures will be taken to eliminate or mitigate increased loading on assets. Care should be taken to identify the exact location (line and level) of any assets, which may be crossed by vehicles on the access route to the site and crossing points will be engineered to the requirements of Scottish Water. Any pipe crossing proposals are subject to prior written acceptance by Scottish Water.

60. Scottish Water will not accept liability for any costs incurred in fulfilling any of the above requirements during the development planning, construction or operational phases, either by the developer, the developer's associates, contractors or any other person or organisation involved in the project.

61. If the developer damages any Scottish Water asset, they will be held liable for any costs resulting from this.

62. Scottish Water may require costs associated with the development to be reimbursed by the developer or the developer's agents.

Appendix XII - Supporting document for Land Management Plan or amendments involving restoration of afforested and open peatlands proposals

Overview of supporting documents

This appendix is the main document to support Peatland restoration proposals in LMP's or amendments. Its structure, and the accompanying appendices as found in the LMP are:

- Introduction
- Afforested deep peatland restoration and restock decisions
- Peatland restoration
- Appendix XII – Peat type/NVC summary translator table
- Appendix XIII – Peatland restoration methods
- Appendix XIV – LMP table template
- Peatland maps – see maps 3.15, 4.5 and 5.8.
- Decision tool for restoration of afforested peatlands not yet available

These documents form a package to support Land Management Plans with proposals of restoration or restocking of afforested deep peatlands.

1. Introduction

The supporting documents are to append Land Management Plan (LMP) submissions and LMP amendments which contain proposals for restocking or restoring areas of afforested peatlands. The purpose of these supporting documents is to:

- outline the implementation of the principles and suggested approach as set out in the Scottish Forestry (SF) Practice Guide 'Deciding future management options for afforested deep peatland.'
- state the format of the supporting information for the proposals.

The supporting documents must be read along with the SF Practice Guide to fully understand the decision-making process.

An interpretation of the Practice Guide, which has formed the context of these LMP supporting documents, is included in Appendix I.

Context

The Scottish Government has set a target of net zero carbon emissions by 2045. In order to help meet this target, Forestry and Land Scotland (FLS) are currently in the process of preparing a Peatland Strategy. The strategy will set out the best way to manage its peatlands, and to determine which afforested peatlands will be restored or restocked on Scotland's public forests and land.

Peatlands will play an important part in achieving this net zero target, due to their natural ability to store and sequester carbon. It is estimated that UK peatlands store 2,300 Mt of carbon (Billett et al. 2010). Peatlands in the UK are naturally treeless due to the wet oceanic climate (Sloan et al., 2018). This differs from European continental peatlands which naturally support a tree cover due to the drier, and generally warmer, summer climate. In their natural state, UK peatlands are too wet and nutrient poor to sustain tree cover, except in exceptional circumstances, such as pine or oak bog woodland. In general, afforestation of unmodified peatlands in the UK is unnatural.

The purpose of the SF practice guide is to ensure that the principles of sustainable forest management are applied specifically in the context of the management of the peatland asset. This is a shared objective of both FLS and SF, and takes account of the valuable ecosystem services provided by peatlands. Specifically:

- The importance of peatlands in relation to climate change. Afforested peatlands have the potential to act as significant sources of carbon, depending on the levels of modifications imposed at establishment and the impact these have had on the peatland condition since that time. (Evans et al., 2017) estimated an average carbon emission rate of 9.9 t CO_2e/ha/yr. The growth rate of a stand of trees on a particular peatland must capture enough carbon to compensate for the loss of carbon from the modified peatland if a net carbon capture outcome is to be realised.
- The contribution towards enhancing biodiversity. Article 8(f) of the Convention of Biological Diversity, signed by the UK Government on 12th June 1992, encourages the repair of damaged ecosystems. As a result, restoration of priority habitats is a key component of the Scottish Biodiversity Strategy.
- The potential ability of peatlands to grow trees to capture carbon, although there are unknown risks to the security of the carbon store, and the ability of restoring peatlands, after the end of subsequent rotations.

Since 2014 FLS has undertaken peatland restoration on a number of peatland types, including the restoration of unproductive plantations on peatlands. FLS restored 2,786 Ha of 'forest to bog' peatland restoration between 2014/15 and 2019/20 inclusive, across sixty project areas. In the same period, FLS restored 3,786 Ha of existing open peatland habitat, across twenty-nine project areas.

FLS anticipates the need to carry out restoration of 35,000-60,000 Ha of afforested peatlands before 2035. This will ensure that no peatland is acting as a net carbon source by 2045. Peatlands are found in an estimated 75% of public forests, and there will be approximately 2,000 peatland

areas within those forests that will need to be assessed using the principles set out in the SF Practice Guide.

The approach outlined in this document aims to ensure that a consistent approach is adopted across all Regions for presenting information to SF, as part of the LMP review process and submission. This should make gathering information, presenting and reviewing it easier and quicker for both agencies.

2. Afforested deep peatland restoration and restock decisions

The step-by-step decision flow process is based on the SF Practice Guide 'Deciding future management options for afforested deep peatland.' An interpretation of this practice guide can be found in Appendix I, and notes are given to clarify questions that have been commonly asked by FLS staff in the past.

Restoration categories, terminology, definitions

The supporting documents uses the terminology as per the definitions within the SF Practice Guide. This is to avoid confusion and allow good understanding in subsequent discussions amongst FLS staff, SF, and external stakeholders. The only term that has been introduced, and not previously used within the SF Practice Guide, is "Assessed peatlands." This term has been used to clearly mark the fact that the "presumption to restore" sites are *identified* using features and the hydrological relationship to them, whilst the "assessed peatlands" and the proposed outcomes result from an *assessment or analysis* and consideration of many factors, within a *decision* flow process.

Please note that all peatlands are assessed based on their entire hydrological unit and the soil types within those. This is not emphasized very strongly in the SF Practice Guide but has proved to be an essential and practical approach. The Practice Guide does state the decisions are made on a site-by-site basis, and since ESC, peatland characteristics and potential tree growth is governed very strongly by peat type, it is sensible to define 'site' as a soil polygon on the 1:10,000 soil mapping layer. For further definitions and clarification regarding peatland hydrological unit, see 'Box 1 - Understanding the functional connectivity (hydrology) of adjacent peatland' in the SF Practice Guide.

Afforested peatland type definitions:

'Restoration sites for which there is a 'presumption to restore'

These are currently afforested deep peat sites that are:

- Likely to negatively impact on habitats designated as qualifying features in the UK Biodiversity Action Plan (UKBAP), or on Natura sites, Ramsar sites, Sites of Special Scientific Interest (SSSI's) or National Nature Reserves (NNR's)
- Sites or parts of sites where restocking is likely to adversely affect the functional connectivity (especially hydrology) of an adjacent Annex 1 peatland habitat (as defined in the EU Habitats Directive), or a habitat associated with one (priority habitats)
- Sites where deforestation would prevent the significant net release of greenhouse gases (Scenario A peat type). These are peat types that are known to be edaphically unsuited for growing plantation trees.

Assessed peatland sites which will be either restored or restocked

Afforested deep peat sites (Scenario B and Scenario C peat categories) which, after assessment, are found to be:

- Sites for which there is clear evidence that they can grow a commercial crop the equivalent of Sitka spruce yield class 8 or more, despite being managed with minimal inputs, and on peatlands which are not acting as a significant carbon source. These sites will be **restocked**.
- The remaining sites will be **restored** unless it is not feasible to do on an ecological basis.

Establishment of Peatland Edge Woodland (PEW)

Afforested deep peat sites (Scenario B and C categories) which cannot grow a commercial crop the equivalent of Sitka spruce yield class 8 or more, and where restoration is not thought to be possible.

This will be under constant review. Restoration progress has been impressive on most sites, but direction of travel is not yet clear on sites with a very specific set of characteristics (for example, Lodgepole pine plantations on an unflushed blanket bog where the peat depth is less than 1.0 meters and on a slope of more than 5 to 10%). If it decided these sites are not restorable, then PEW may be the only alternative sustainable land use option. However, past attempts at establishing native trees on deep peatlands, even with excessive drainage and ground preparation have not been encouraging. Also, a partial restoration of the hydrology may be required on cracked peats to ensure they are not releasing an excessive amount of carbon dioxide.

3. Decision verification

The information sources and verification that have been used in the decision-making process for restoration or restocking of a deep peatland site are provided in this section.

As much information is provided spatially in maps as possible, though some of the information is provided in a table (see the last part of appendix IV).

Appendix II is the LMP summary table used to provide context and a summary of:

- Total area of deep peat soils,
- Total area of afforested peatland,
- Total area of existing open peatland,
- Total area proposed of 'presumption to restore,'
- Total area of proposed restoration after assessment,
- Total area of deep peat to be restocked.

No deep peatland should be planted as part of a new woodland creation. Note, that the 1:10 K soil survey uses the Forestry Commission Soils Classification. Within this classification, a peat depth range is described which is typical for that peat type (see Appendix III – NVC summary table for peat depths). In most cases, this negates the need for a peat depth survey where 1:10 K soils data is available. The soil survey will help inform areas of deep peat and the wider boundaries of the hydrological unit. A description of the map templates supplied are found in Appendix IV.

Restoration decisions

1. Sites for which there is a **presumption to restore**:
    - Spatial assessment based on boundaries of Designated Sites and existing priority habitats.
    - Soil survey with 1:10 K mapping accuracy. Soils have been classified according to the FC Field Guide 'The identification of soils for forest management.' Soil maps will have been verified and confirmed fit for purpose by ground truthing of FLS staff on a sample and methodical basis.
    - Sites without 1:10 K soils maps will have been verified by FLS staff field surveys using botany, topography/landscape, soil knowledge and extrapolation based on survey and experience. Peat depth survey may also be provided.

2. Afforested deep peat sites which require an assessment of crop performance – **assessed peatlands** (Scenario B and Scenario C peat types):
    - Soil survey with 1:10 K mapping accuracy.
    - ESC prediction

- First crop rotation yield class (if measured)
- Harvesting data (if available)
- Description of historic site modifications
- Current crop deficiencies
- Predicted yield class for second rotation

Restock decisions

3. Afforested deep peat sites which require an assessment of crop performance – **assessed peatlands** (Scenario B and Scenario C peat types):

- Soil survey with 1:10 K mapping accuracy.
- ESC prediction for species chosen
- First crop rotation yield class (if measured)
- Harvesting data (if available)
- Description of historic site modifications
- Current crop deficiencies (should be none)
- Predicted yield class for second rotation and proposed establishment methods.
- Intention to rewet the site (i.e., drain blocking and back fill trenching) may need to be undertaken if historic modifications exceed current UKFS limits, or the site's hydrological function is significantly altered, to ensure that the plantations do not act as a carbon source.

4. Afforested deep peat sites which cannot grow a commercial crop the equivalent of Sitka spruce yield class 8 or more and cannot be restored.

- Establish low density native woodland (500 stems/Ha) and block drains where possible.
- Fell to waste non-native trees if they are likely to have exceeded making up 49% cover of the canopy (see SF Practice Guide for details).

Table 1 Overview of information that will be provided within the LMP for each peatland category. The template for provided this information can be found in Appendix II.

CATEGORY OF RESTORATION/ RESTOCKING BEING PROPOSED	INFORMATION PROVIDED
Presumption to restore	Essential: • Location of restoration proposal • Designated Sites (if present) • Existing priority habitats (if present) • Location of all Scenario A peat types and their hydrological units • Annotation of any features of note Not required: Crop data (the objective is to ensure the existing sites hydrological unit is intact, regardless of modifications and tree size).
Assessed Peatlands – where deforestation *would prevent a significant net release of greenhouse gases*	Essential: • 1:10 K soil maps, or map illustrating peat soil types drawn from survey • ESC statement • Peatland modifications • Statement confirming any deficiencies in 1st rotation • Comment on correction factors • Predicted YC for 2nd rotation If available: 1st Rotation YC (if measured) and actual outputs (if available)
Suitable for Restocking	Essential: • 1:10 K soil maps, or map illustrating peat soil types drawn from survey • ESC statement • Peatland modifications • Statement confirming there were no deficiencies in 1st rotation • Comment on correction factors • Predicted YC for 2nd rotation • Statement of actions required to limit carbon loss from modifications to minimal levels that do not negate the carbon captured by trees If available: • 1st Rotation YC (if measured) and actual outputs (if available)
Not suitable for restocking	Essential: • 1:10 K soil maps, or map illustrating peat soil types drawn from survey • ESC statement

CATEGORY OF RESTORATION/ RESTOCKING BEING PROPOSED	INFORMATION PROVIDED
	• Peatland modifications • Predicted YC for 2nd rotation • 1st rotation statement of deficiencies present • Justification of correction factors used to adjust ESC prediction. If available: • 1st Rotation YC (if measured) and actual outputs (if available)
Peatland Edge Woodland	Essential: • Confirmation that peatland restoration is not possible. • Confirmation that establishing natives is possible with a minimally modified peatland. • Statement of actions required to limit carbon loss from modifications to minimal levels that do not negate the carbon captured by trees.

Appendix XIII – Peat type/NVC summary table

Overview of the FC Soil Classification and related peat types, legislative EU Habitats Directive – Annex 1, UKBAP Priority Habitats, and NVC type. For each peat type, the range of likely peat depths are given. These are based on Pyatt's FC Soil Classification (1982) of peat types, terrain, and local experience. Where soil survey information is available (at 1:10,000 accuracy), it eliminates the need for site-specific peat depth surveys.

FC Soil Group		Peat type	FC Soil Code	Peat depth (Pyatt 1982)	EU Habitats Directive Annex 1	UKBAP Priority Habitats	NVC type
Flushed peatlands	8 *Juncus* or basin bogs	*Phragmites* (or fen) bog	8a	0.5 – 4 m	Can include H7140	Lowland Fen + Upland Flush, Fen & Swamp	Various neutral or slightly base-enriched wetland types including M5, M9, M23, M25c, M27, M28, S25, S27, S28 and (non-NVC) MX
		Juncus articulatus or *J. acutiflorus* bog	8b				Description reads most like M6d, but *Juncus articulatus* is scarce in M6d and more common in its neutral counterpart

FC Soil Group		Peat type	FC Soil Code	Peat depth (Pyatt 1982)	EU Habitats Directive Annex 1	UKBAP Priority Habitats	NVC type
							M23a
		Juncus effusus bog	8c				M6c
		Carex bog	8d				M4 and M6a/b
	9 *Molinia* or flushed blanket bog	*Molinia*, *Myrica*, *Salix* bog	9a	0.5 – 4 m	H7130 (all occurrences) and H7150 (occurrences on blanket (not raised) bogs in unenclosed upland situations)	Purple Moor-Grass & Rush Pasture if in lowlands	M25a co-dominated by *Molinia* and *Myrica*
		Tussocky *Molinia* bog, *Molinia*, *Calluna* bog	9b			Lowland M25 = Purple Moor-Grass & Rush Pasture; M15/16 = Upland+ Lowland Heaths	M25a and examples of M15b/M16 co-dominated by *Calluna* and *Molinia*
		Tussocky *Molinia*, *Eriophorum vaginatum* bog	9c			Blanket Bog	M25a on deep peat, and M20-M25 intermediate (but abundant *Eriophorum vaginatum* suggests a lack of flushing)
		Non-tussocky *Molinia*, *Eriophorum vaginatum*, *Trichophorum* bog	9d				M17 (but abundant *Eriophorum vaginatum* suggests a lack of flushing)
		Trichophorum, *Calluna*, *Eriophorum*, *Molinia* bog (weakly flushed)	9e				M17 (but abundant *Eriophorum vaginatum* suggests a lack of flushing)

FC Soil Group		Peat type	FC Soil Code	Peat depth (Pyatt 1982)	EU Habitats Directive Annex 1	UKBAP Priority Habitats	NVC type
Unflushed peatlands	10 *Sphagnum* (or flat or raised) bogs	Lowland Sphagnum bog	10a	0.5 – 12 m	H7110, H7120 (all occurrences) and H7150 (occurrences on raised peat surfaces in agricultural lowlands).	Lowland Raised Bog	Mostly M18 but can include some M17, M19, M20 and small M1/2/3 bog pools
		Upland *Sphagnum* bog	10b			Blanket Bog	Mostly M17 but can include smaller areas of M18 and small M1/2/3 bog pools in the wetter parts
	11 *Calluna*, *Eriophorum*, *Trichophorum* (or unflushed blanket) bog	*Calluna* blanket bog	11a	0.5 – 4 m	H7130 (all occurrences) and H7150 (occurrences on blanket (not raised) bogs in unenclosed Upland situations)	Blanket Bog	M19 (relatively dry and strongly *Calluna*-dominated forms)
		Calluna, *Eriophorum vaginatum* blanket bog	11b				M19
		Trichophorum Calluna blanket bog	11c				M17 and, where blanket bog surface has dried out to some degree as a result of draining and/or burning(and *Eriophorum vaginatum* very sparse or absent), M15/M16
		Eriophorum blanket bog	11d				M20

	14 Hagged / eroded bog	Shallow hagged eroded bog	14	0.5 – 4 m	H7130 (all occurrences) and H7150 (occurrences on blanket	Blanket Bog	Hag tops mainly M19 but can also include M17 and, where more dried-out, M15/16

FC Soil Group		Peat type	FC Soil Code	Peat depth (Pyatt 1982)	EU Habitats Directive Annex 1	UKBAP Priority Habitats	NVC type
					(not raised) bogs in unenclosed upland situations)		and (driest) H12. Bare peat, M3, M6, M17, M19 or M20 in depressions between hags.
		Deeply hagged eroded bog	14h				Hag tops mainly M19 but can also include M17 and, Where more dried-out, M15/16 and (driest) H12. Bare peat, M3, M6, M17, M19 or M20 in depressions between hags.
		Pooled eroded bog	14w				M1/2/3/17, pools with *Menyanthestrifoliata* (no NVC type) and deeper unvegetated pools of open water

Appendix XIV – Peatland Restoration: Forest-to-Bog methods

Restoration treatment method descriptions and specifications have been produced by several organizations over the years. FLS values advice from Peatland Action Nature Scot, and follows the terms and conditions set out in the terms and conditions of this grant funding.

This document serves to distil any advice and information published by Nature Scot, and it should be noted that Nature Scot will be publishing information notes on the various restoration treatment methods, and indeed is preparing a Restoration method compendium. Please read this document in conjunction with other sources of information.

FLS uses the FC soils classification system to categorize the various peat types. This is useful because these give us an indication of the peatland vegetation we would expect and indeed are aiming to restore in many cases. It is also useful because when considering 'forest to bog' sites when specifying restoration specifications, because the layout and density of drains is strongly correlated to peat type, and the foresters at time of woodland creation seem to have approached the drainage specifications in the same way.

Forestry Commission Soils Classification

The FC Field Guide 'The identification of soils for forest management' identifies and describes several different peat types. Within the FC classification, the peat types are classified according to dominant species found in the vegetation communities. This is governed or described by the same factors as that used by the Ecological Site Classification system, the Ellenberg values. The main environment factors that govern the vegetational community of peatlands are their nutritional status and their wetness (hydrological behaviour). Their nutritional status is strongly influenced by how peatlands receive water, such as from higher or surrounding ground (flushed peats) or through precipitation only (rain fed only, or unflushed peats).

Each peat type corresponds with a National Vegetation Classification type and UKBAP priority habitat, which is outlined in a summary table in Appendix III. Therefore, each peat type directly translates to a priority habitat for the purposes of assessment under The Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999' (as amended) and the Scottish Government's policy on Control of Woodland Removal.

Outlined in Table 1 below are several types of peatland that FLS will aim to restore. This will be on three scales:

1. Large peat catchment scale – notable iconic projects like Dalchork, Flanders and Lochar mosses

2. Medium, whole coupes and package of coupes within a block
3. Small, 'parts of coupes' scale.

Table 1 FC Soil Classification - overview of peat types

PRIORITY HABITAT TYPE	FC SOIL TYPES (PEAT TYPES)	TYPICAL FORESTRY MODIFICATIONS	SCALE OF PEAT TYPE WITHIN NFE	ESTIMATED AREA OF PEAT TYPE ON THE NFE
Blanket bog (BB)	Flushed blanket bogs (9)	Deep ploughed ridges and furrows, intensively ploughed drains	Can cover large areas, especially on long slopes leading into riparian zones. Also found locally within unflushed peats.	40,400 Ha Likely that just under half of this will be restored.
	Unflushed blanket bogs (11)	Medium ploughed ridges and furrows, with a low to medium intensity of ploughed drains	Probably the greatest extent of peatland on the NFE	91,800 Ha Likely that just under half of this will be restored.
	Upland or intermediate bogs (10b)	Deep ploughed ridges and furrows and ploughed drains. Very similar to LRBs	More than is mapped. Many areas mapped as included within 11 and 9 peat types. Resolution and preciseness issue.	5,000 Ha – often under-represented on JHI maps. All of this will be restored.

PRIORITY HABITAT TYPE	FC SOIL TYPES (PEAT TYPES)	TYPICAL FORESTRY MODIFICATIONS	SCALE OF PEAT TYPE WITHIN NFE	ESTIMATED AREA OF PEAT TYPE ON THE NFE
	Lowland Raised bogs (10a)	Medium to deep ploughed ridges and furrows. Large hand and machine dug drainage channels sometimes, some predating afforestation.	Many sites, some large, but many small (<30 Ha). Found in Lowlands, Carse of Stirling, and South. Also, Drumfern in Lochaber. Amounts total between 2000-3000 Ha.	2,400 Ha – under-represented due to JHI maps covering a large proportion of this type, and incorrectly categorizing it as an 8. All of this will be restored.
	Parts of blanket bogs (9), and Basin bogs (8)	Intensive drainage. Usually grew very large trees but only because of the drainage density.	Usually a small component of a larger peat catchment.	Incorporated above.
	14	Deep ploughed, often unevenly and in small patches. Drainage low intensity but effective, along with the hagged nature of these areas.	Usually a small component within a larger peat catchment. Usually only smaller areas were planted, larger areas avoided. Largest expanses are on upland sites on the upper reached of what was regarded	5,400 Ha. Mostly on open ground, but likely that all of this will be restored. Hags on open ground are thought to act as very high emitters of carbon dioxide.

PRIORITY HABITAT TYPE	FC SOIL TYPES (PEAT TYPES)	TYPICAL FORESTRY MODIFICATIONS	SCALE OF PEAT TYPE WITHIN NFE	ESTIMATED AREA OF PEAT TYPE ON THE NFE
			plantable.	

Forest-to-bog restoration methods

Afforested peatland restoration, known more commonly as 'forest-to-bog' restoration, is thought to take a least 10 years (after re-wetting) to change from acting as a carbon source to a carbon sink. Therefore, there is an inherent urgency to begin restoration as soon as possible after felling, with respect to the Scottish Government target of net zero carbon emissions by 2045.

Restoration will be achieved through the use of a number of re-wetting techniques. The most common techniques used in forest-to-bog restoration are listed below. These methods are usually employed together, across a site in a sequence, beginning at the upper areas and working downslope towards main water courses, or where water leaves the site. Note, these methods are under constant development.

- **Peat dams**: usually the most effective way of blocking drains and furrows, where appropriate, and dispersing water across a peatland, whether on open or a forest-to-bog project. **Re-profiling the drains** is also carried out at the same time as installing peat dams, but only if they do not have high peak or base flows, indicated by the absence of vegetation in and on the sides of the drain.

Figure 1a. Peat dams installed at Criadadh More, Isle of Mull on 19/03/2015

Figure 1b. Site response after almost three growing seasons on 07/09/2017

Figure 1c. Site response after seven growing seasons on 20/11/2021

Stump flipping and ground smoothing: this un-modifies the ploughed ridges and furrows which in most cases, if left in situ suppresses the water table and development of peatland vegetation, and promotes regeneration of negative indicators such as too much Calluna or non-peatland species or undesirable non-native and native trees. Care is needed when restoring sites planted with Lodgepole pine, as the root-ball penetrates into the peat much deeper than the flat root plate of Sitka spruce. When flipping LP stumps, it is undesirable to bring catotelmic (deeper) peat to the surface, so a 'light touch' ridge and furrow reprofiling should be carried out if possible, leaving stumps in situ, to smooth most of the surface. This is only possible where stumps were cut low using a shears head (because stumps of standard height will throw the tracks on the machine), or access routes will need to be carefully planned and stump flipped, to allow access to particular parts of the site.

Figure 2. Gow moss after clear felling prior to restoration.

Figure 2. Gow moss after site has been treated using stump flipping and ground smoothing techniques.

Backfill trenches (trench linear bunding, but without a high bund): this counteracts excessive lateral flow of water within the peat, usually promoted by historic events or modifications, such as fire, peat bank cutting, or peat cracking. This can result from the ploughing and draining carried out during afforestation, and the subsequent drying and suppressing effect of the mature trees on the peat and water table.

Figure 3. Example of backfill trenches at Gow moss. Note the positive indicators – the high water table and extent of cotton grass.

Peat hag and gully re-profiling: this is used to repair excessive erosion of peatlands, usually in an upland setting. Gullies can be caused by excessive surface water run-off or promoted by artificial drains catching water across a natural shedding area, and bringing it to a confluence where erosion begins and continues indefinitely. Hags probably have several triggers, including saturated peats, freezing and unfreezing conditions, over grazing, and perhaps are a legacy of the mini-ice age in the 1700's. Many appear to develop from peat pipes which eventually collapse.

Figure 5a. Extensive peat hags at Glen Affric prior to restoration.

Figure 5b. Re-profiling of peat hags and the resulting higher water table.

Figure 5. Landscape perspective of Beinn a Mheadhoin before restoration.

Figure 6. Landscape perspective of Beinn a Mheadhoin after restoration.

Deciding upon restoration methods (to be replaced by separate document)

In deciding upon restoration treatments, the methods and specifications used in all forest-to-bog projects are often very similar. Usually, a combination of the techniques described above will be applied. Peat damming and re-profiling of forestry drains is always carried out. Stump flipping and ground smoothing is carried out on a majority of sites, and back fill trenching is usually only carried out where cracking is present or where the water table is lower than can be explained by the drainage network or other modifications. The main aim across all sites is to restore the peatland's hydrology and behaviour by raising the water table.
Details of restoration plans cannot be confirmed until after the trees have been clear felled as the standing trees or windblow obscures a proper view of the site. Access across the site, giving a clear view of the lie of the land, localized undulations, and where the flushed areas are, is needed to determine the exact location of drains, to determine their status in terms of peak flow and base flows, allowing decisions to be made on the positioning of peat dams and spotting if the underlying peat is cracked or not. Some indication of the positions and intensity of drainage may be apparent from studying aerial photographs, but usually only where Sitka spruce plantations are uniformly growing and not windblown.

Despite this, the layout of drains is often fairly predictable, most individual forests were ploughed and drained by the same people using the same machines to the same specifications. The foresters who designed afforestation drainage had a very high technical knowledge of how to drain peatlands in an optimal manner. There is a strong correlation of drainage density and peat type as described in table 3. In our experience, estimates of the number of peat dams required can be made during the contract procurement stages of the project.

Table 2 Overview of typical drainage intensity or spacing of drainage by peat type.

Peat type	Typical drainage intensity	Typical spacing
8	Very dense, wettest peat of all	5 to 15 meters. Drainage plough often incorporated into ploughed ridges and furrows, if not all
9	High density of drains	10 to 25 meters
10	Very dense	5 to 15 meters. Drainage plough often incorporated into ploughed ridges and furrows, as well as across ridges/ furrows
11	Low density	30 to 50 meters.

Peat type	Typical drainage intensity	Typical spacing
14	Low density	20 to none. Very variable depending on topography and layout of hags.

Peat cracking lowers the water table, drying the peat, especially for longer periods and more thoroughly during drought conditions. This increases the amount of oxidization of the peat, leading to high carbon dioxide emissions. Identifying areas of peat cracking is easier after clearfell as the patches of drier than expected peat are possible to identify in the context of the topography. Understanding the landscape and terrain helps to find which areas are most likely to contain cracking, such as slightly raised areas and hummocks, or where the plantation trees have grown better. In addition, a thorough survey of the drains and their loading, peak flows, and depth of peat below the base of the drain can only safely and efficiently be done after the trees have been clear felled.

Table 4 (on the next page) is in draft, and will be developed and expanded upon into a decision support tool.

Table 4 Decision flow approach in deciding upon restoration treatments to be employed.

FACTOR	QUESTION	ANSWER	CONCLUSION
Drainage	Are the drains scoured?	Yes	Do not block, unless base flow and peak flow will be significantly altered by blocking and distributing water out of the feeder drains upstream
		No – the sides are vegetated, showing that peak flows and base flows are consistently low throughout the year	Go to next question
	Are the bases of drains on at	Yes	Block drains using *standard peat dams*, and re-profile drains

FACTOR	QUESTION	ANSWER	CONCLUSION
	least 50 cm of peat?	No, and base flow is very low	Block drains using *peat plugs* (similar to peat dams, but without excavating oxidised peat from underneath the drain base) and re-profile drains
Ridges and furrows	Are the furrows filled with sphagnum and the height difference between the top of ridges and sphagnum less than 25 cm?	Yes, and the water table appears to be consistently high, and sphagnum is also found growing on the original ground surface and on tops of the ridges.	Do not Stump flip and ground smooth
		No, the plough ridges and furrows are prominent, and sphagnum is confined to the base of the furrows. The water table is low, especially when comparing the impact of the drains	Stump flip and ground smooth
Peat cracking	Is the peat cracked?	Yes	Install back fill trenches no longer than 25 m, and across the slope, at right angles to the furrow and ridges, if possible, but up to 45 if not.
Hagged peat	Are there hags present on the site?	Yes	Hag re-profile these areas

Appendix XV – Future management of afforested peatlands

SUMMARY AREAS	Hectares (Ha) 1:10k soils map	Hectares (Ha) JHI map	Comments
Current management of peatlands in LMP			
Afforested deep peatlands	7.1		Total area size (Ha) of afforested peatlands based on SCDB information.
Existing open habitat on deep peat	11.8		Total area of open peatland (Ha) from SCDB.
TOTAL - All deep peat soils	18.9		Total area size (Ha) of deep peat soils within the forest block/LMP area based on the soils data. Deep peat soils are defined as per the SF Practice Guide: Scenario A, B and C soils.
Future management of afforested peatlands			
'Presumption to restore' peatlands Forest-to-bog restoration of afforested peatlands including the hydrological catchment	0		Only includes afforested peatlands which lie next to open existing peatlands, or Scenario A peatland types, as per the SF Practice Guide. The area of their hydrological units is also included.
'Assessed' peatlands Forest-to-bog restoration to secure carbon store and sequestration, and maximize ecosystem services.	7.1		Total area of afforested peatlands that will be restored following an assessment of predicted growth (YC). Restoration of assessed peatlands are concluded where no evidence is found to support that the next rotation stand would grow Sitka spruce YC 8 or more with minimal disturbance and low level of peatland modifications. Assessed peatlands includes the hydrological catchment.
Peatlands to be restocked	0		Total area of afforested peatlands that will be restocked because evidence was found to support the conclusion that the second rotation will clearly be YC 8 or more with minimal disturbance and with a low level of peatland modifications.

Presumption to restore table

The table below is only relevant for Presumption to Restore peatlands (Scenario A peat types) where deforestation would prevent the significant net release of greenhouse gases.

	Description	Location of described attribute (peat types, part of the forest)
Description of any designated sites, priority Peatland habitats which require protection and enhancement.	Illustrated on map 3.15	None

Description of peat types present in the LMP forest block(s), and any characteristics of interest	Illustrated on map 3.15	Majority of the upper open areas are 11c Blanket bog. Potential for historic drainage channels that could fall within the scope of restoration requirements. The area to the west is 6e/11c/8c, with the deep peats falling on the upper parts and 6le on the steeper slopes down to Lochan Dubh. To the north-east, 6le/8c/13p. 8c generally in open areas, but peat depths shallow.
Description of hydrological units, extent, relation to peatlands to be restored, and the topography.		No afforested hydrological units have been identified. Only minor existing open habitats forming part of the hydrological unit fall outside the restoration area.
State any points of note from survey	Illustrated on map 3.1	Assessed peatlands outside the restoration area were excluded as they did not have the required depth of peat. Considered too shallow for stump flipping. Peat depths variable, but 8c likely in existing crop open areas where still often shallow; areas defined by contours.

Assessed peatlands table

The table below is only relevant for Assessed Peatlands (Scenario B and C peat types) where there needs to be clear evidence that restocking on peat soils will produce a yield class equivalent to Sitka spruce 8 or more.

Attribute described	Description	Location of described attribute (peat types, part of the forest)
ESC statement (range) State range respective to peat types	ESC	ESC suitability for SS is 0.2, peat type 6le/11c/8c, with no drainage installed. With drainage, the figure rises to 0.35.
Accumulated Annual Temperature (range)		1396 to 1438
DAMs score (range)	Map 3.4	17 - 20
Crop deficiencies (needles, colour, leader length)	Aerial photo only	Slight discolouration of SS in checked areas. These areas probably coincide with the 11c component.
Location and extent, proportion of healthy crops (no signs of deficiencies) and reason	Aerial photo only	About 15% of the gross primary restoration area comprises 3 areas of checked SS at 50% stocking, located in wetter hollows and wet flats. SS is otherwise healthy, apart from a small percentage of checked trees. The small amount of LP within the restoration area is mostly windblown.

Attribute described	Description	Location of described attribute (peat types, part of the forest)
Statement of correction factors used to predict of next rotation from ESC outputs (drainage, fertilising, flushing, heather control, peat compaction, and the combination of all of these per peat type)	ESC	SNR limits use of SS without drainage to YC 5. Alternative species are limited to a few pines, none achieving more than YC 5 and described as 'marginal'. No fertilising or heather control is applied. Default models used. Only two broadleaved species are noted as achieving 'marginal' status, with nothing better. They are Downy birch and Grey alder. SNR is the main limiting factor, followed by exposure. Peat type present is 6le/11c/8c. With drainage installed, SS achieves YC 9, but is described as 'marginal' due to SNR.
Statement of actions required to limit carbon loss from peatland soil. For example, partial re-wetting, referencing average water table height and density of drains.		Main area of open hill may have historic drainage channels which will be blocked. However, due to the uneven topography, rewetting is likely to be limited to discreet flatter areas. Planted areas will also be suitable for drainage channel blocking. Other operations may be dependent on the final form of tree removal adopted, such as mulching, and the associated about of woody material left on site.
Where PEW is proposed, confirm and explain why restoration of deep peatland is not possible		None proposed due to the difficulty of establishment on this site.

Restoration proposals

The table below is to state and describe the restoration techniques to be applied to the proposed restoration areas.

Attribute described	Description	Location of described attribute (peat types, part of the forest)
Treatments used to restore the hydrology	**Please see standard approach (appendix XIII)** State any site-specific specifications or alterations of the approach:	Drain blocking with peat dams.
Treatments used to restore the topography (remove afforestation modifications, and previously hagged sites)	**Please see standard approach (appendix XIII)** State any site-specific specifications or alterations of the approach:	Dependent on results/methods used to clear/mulch existing crop.

Attribute described	Description	Location of described attribute (peat types, part of the forest)
Treatments used to counter-act peat cracking or other modifications caused by the afforestation of the peatland	Is peat cracking present?	No

EIA risk assessment

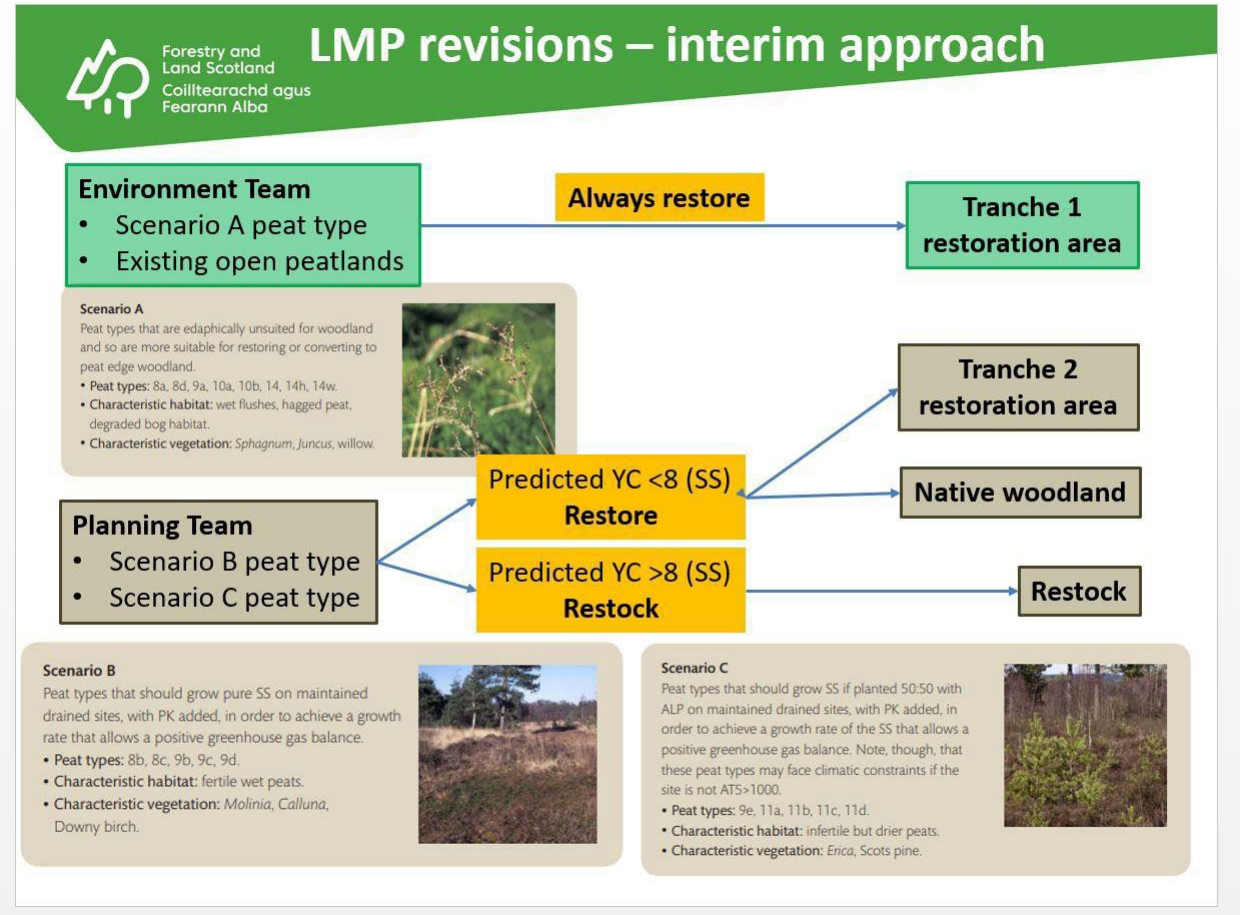
Forest-to-bog peatland restoration is classified as a forestry project under the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017. To obtain consent from Scottish Forestry, an assessment of potential environmental risks as a result of the proposed forestry project is required to allow the determination of whether it is likely to have significant effects on the environment.

Main risks to assess	Impact assessment
Population and Human Health	**No impact.** Core paths/water supplies.
Biodiversity (habitats, species)	Positive. Restoration of a degraded peatland will restore a priority open habitat, benefitting both habitat and its associated species. Pre-operational surveys will identify any protected or breeding species to ensure suitable mitigation is in place to avoid any disturbance.
Land	No impact. Where the restoration project is adjacent to agricultural land, boundary drains will not be blocked to ensure neighbouring land is not compromised by re-wetting and increased potential to flooding.
Soil – and geology, geomorphology	Positive. Re-wetting the site will benefit the peat soils as forestry modifications will be reversed to stop oxidisation and further degradation and erosion of the peat.
Water	Positive. Re-wetting techniques have shown to have no significant adverse effect on water quality. Ultimately, the water quality of the local area will be improved by reducing run-off from the exposed peat and degraded peatland.
Air	No impact.
Climate	Positive. Afforested peatlands have the potential to emit more GHG emissions than can be absorbed by a growing woodland. Restoration of afforested peatlands, especially Presumption to restore peatlands, will prevent the significant net release of greenhouse gases, ultimately benefitting the local climate.
Material Assets	No impact.
Cultural Heritage	No impact. Pre-operational surveys will identify any cultural heritage features to ensure suitable mitigation is in place to avoid any disturbance.

Main risks to assess	Impact assessment
Landscape	Positive. Peatland restoration will create more open space within the LMP, which will contribute to the open habitat networks in the surrounding area, improving visual continuity of the landscape. It will also contribute towards visual improvements by removing skyline conifers.

Control of Woodland Removal Policy: Peatland restoration projects meet the requirements of the Scottish Government's Control of Woodland Removal Policy as the deforestation and subsequent restoration will enhance a priority habitat and its (hydrological) connectivity.

Appendix XVI – Peatland restoration flow chart



Appendix XVII – Notes from Map 4.5

The notes below are copied from the map starting at the northernmost and proceeding anti-clockwise.

Assessed SS YC 20/HL YC 10, 6l/8c Steepish slopes with shallow peat, unsuitable for restoration, restock with SP/MB.

Assessed HL YC2 6l/8c/4 with some open space on flatter sections, but little or no peat on steeper sections. Propose restock with SP/MB, but element of open space for any pockets of deep peat.

Existing open hill 8c/11c but not suitable for further restoration due to shallow peat depths and slope.

Assessed SS YC8/2 on 6le/13p, but peat depths indicate deep peat, so included for restoration.

Assessed SS YC8/2 HL YC0 8c and 6le/11c/8c on steep slope. Peat depths do not allow for stump flipping. Suggested for native Edge Woodland but only Grey alder found to be silviculturally suitable and would be difficult to establish, so permanent open space proposed.

Assessed SS YC8/2 LP YC 6, 6le/11c/8c, proposed for peatland restoration.

6le/11c/8c, mostly open, proposed peatland restoration as it contains some checked SS and cultivation.

Assessed SS YC8/2 11c, for inclusion in peatland restoration work.

Assessed existing open - restore Potential presence of historic drainage that can be dammed when machinery on site for work on adjoining restoration areas. Some parts of the site will not be suitable for restoration due to steeper slopes with shallow soils.

Assessed SS YC 16/HL YC 4/ LP YC 6 6le/8c/13p - more peaty sections tend to be open, but still showing as shallow, so could restock.

Mostly open space/rocky knolls - 8c/6le/13p Peaty areas already open and not suitable for planting.

SS YC 20/ HL YC 4 - 8c/6le/13p. Mostly steep or very steep, with shallow peat. Not suitable for restoration, so restock where not existing open space.