Forestry and Land Scotland
Coilltearachd agus Fearann Alba

Gamescleuch

Land Management Plan
2022 - 2031
V1.0

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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Property details	
Property Name:	Gamescleuch
Grid Reference (main forest entrance):	NT 2793 1310
Nearest town or locality:	Ettrick
Local Authority:	Scottish Borders

Applicant's details	
Title / Forename:	Mr Tom
Surname:	Harvey
Position:	Forest Planner
Contact number:	07990627644
Email:	Tom.Harvey@forestryandland.gov.scot
Address:	Forestry and Land Scotland, Weavers Court, Forest Mill, Selkirk
Postcode:	TD7 5NY

Owner's Details (if different from Applicant)	
Name:	N/A
Address:	N/A

1. I apply for Land Management Plan approval for the property described above and in the enclosed Land Management Plan.

2. I apply for an opinion under the terms of the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017 for afforestation / deforestation / roads / quarries as detailed in my application.

3. I confirm that the scoping, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC agreed must be included. Where it has not been possible to resolve specific issues associated with the plan to the satisfaction of the consultees, this is highlighted in the Consultation Record.

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

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

Signed, Pp Regional Manager		Signed, Conservator	
FLS Region	South	SF Conservancy	South
Date	15.06.2022	**Date of Approval**	
		Date Approval Ends	

Contents

1.0 Objectives and Summary

1.1 Plan overview and objectives

Plan name	Gamescleuch
Forest blocks included	Gamescleuch
Size of plan area (ha)	424.2 ha
Location	See Location map (**Map 1**)

Long Term Vision
Gamescleuch generates a reliable , steady supply of diverse timber products to meet market demands. Diversification of tree species incorporate both single species sub-compartment components and intimate mixtures to adapt to and mitigate the impacts of climate change. Gamescleuch offers viable habitat connectivity to the natural environment both within the site and on neighbouring land. Future management of the site will also reduce operational forestry impacts on neighbouring land with the use of minimum intervention.
Management Objectives
1. Produce a management plan that contributes to the sustainable flow of timber for the Region whilst also adding resilience by diversifying future species choices and felling ages into the plan area. 2. Utilise high yielding soft conifers to sequester carbon and contribute to mitigating climate change. 3. Building in environmental resilience with the use of strategically allocated broadleaves and open areas to expand and buffer existing environmentally sensitive areas.
Critical Success Factors
• Timely felling of coupes to reduce impact of pockets left by Statutory Plant Health Notice (SPHN) on future operations and reduce adjacency impacts with hot planting where proposed. • Wildlife management infrastructure in place to allow for adequate protection of palatable alternative conifer species and broadleaves.

1.2 Summary of planned operations

Table 1

Summary of Operations over the Plan Period	
Clear felling (gross)	96.68 ha
Thinning (potential area)	0 ha
Restocking (gross)	103.22 ha
Afforestation	0 ha
Deforestation	5.18 ha
Forest roads	0 m
Forestry quarries	0 ha

The forest is managed to the UK Woodland Assurance Standard – the standard endorsed in the UK by the *Forest Stewardship Council and the Programme for the Endorsement of Forest Certification*. Forestry and Land Scotland is independently audited to ensure that we are delivering sustainable forest management.

2.0 Analysis and Concept

The planning process was informed by collecting information about the woodland, which is presented in **Appendix I** and on the Key Features map (**Map 2)**. During the development of this plan we have consulted with the local community and other key stakeholders, and a Consultation Record is presented in **Appendix III**.

Below lists the objectives for the site and how the key features present opportunity or constraint. The Analysis of these form the concept for this Land Management Plan.

Objective: Produce a management plan that contributes to the sustainable flow of timber for the Region whilst also adding resilience by diversifying future species choices and felling ages into the plan area.

- **Opportunities**:
  - Much of the mature crop is currently at or very close to its maximum mean increment giving opportunity to restructure within the timeframe of this land management plan.

    - Damage from the Storm Arwen event has given opportunity to restructure and restock areas early but will also allow for further productive species diversity and non-productive species for future environmental buffers.
- Constraints:
    - The recently issued Statutory Plant Health Notices have created pockets within the mature crop. These pockets of clear fell will need incorporating into future restock designs and future management coupes.
    - With the damage caused by the recent Storm Arwen event some coupes within previously managed areas of long term retention are now required to be cleared.
- Concept:
    - Reduction of the current management coupe scale to create smaller coupes that capture the SPHN areas whilst also providing sufficient buffers between felling to allow for adjacency.
    - Breaking up the areas under long term retention into smaller management coupes will reduce their clearfell impact on localized viewpoints and also allow for the restock to incorporate areas of non-productive broadleaf. These will buffer the ancient semi natural woodland and remove future impacts of forest operations.
    - Allocation of species requiring thinning close to Forest roads will allow for ease of future forest operations and the use of self-thinning mixtures in areas where steep ground makes intervening operations challenging will be adopted.

Objective: Utilize high yielding soft conifers to sequester carbon and contribute to mitigating climate change.

- Opportunities:
    - A mixture of soil types give opportunity for a relatively diverse mixture of appropriately matched species.
    - Recent crop monitoring have shown a good success rate for the more deer palatable species such as pine.
- Constraints:
    - A high proportion of soil types are nutrient poor which will restrict some of the more nutrient favoring species choice.
    - Known tree disease will further restrict species choice.
    - Topography may make some areas difficult for effective deer management
- Concept:
    - Where soils allow, alternatives to Sitka spruce have been utilized and where future silvicultural interventions are restricted due to topography mixtures are employed whereby self-thinning can naturally occur.
    - Areas where previous SPHN have been felled will not be restocked with susceptible host species for the disease *P.ramorum*.

- Consideration at the work plan stage for strategically placed deer infrastructure will improve conditions for effective wildlife management.

Objective: Building in environmental resilience with the use of strategically allocated broadleaves and open areas to expand and buffer existing environmentally sensitive areas.

- Opportunities:
  - Windblow damage from the recent Storm Arwen event has opened up areas of long term retention requiring earlier than planned clearfell, this gives opportunity to restock with mixed native species and give, in time, a more resilient buffer and expansion to the adjacent ancient semi natural woodland within the Gamescleuch linn.
  - Effective deer control could lead to a significant expansion of new mixed woodland along riparian margins and increased floral diversity on open ground for a relatively low cost/ ha.
  - Link the timing of deer control effort to the timing of browsing-sensitive restocks within the wider LMP area.

- Constraints:
  - Localized visual impacts of clearfell will need careful consideration so that the impact is mitigated as much as possible
  - Seeding in of undesirable species has been evidenced in some areas of managed open sub compartments
- Concept:
  - Breaking up the areas under long term retention into smaller management coupes will reduce their impact on localized viewpoints and also allow for the restock to incorporate an area of non-productive broadleaf buffering the ancient semi natural woodland and remove future impacts of forest operations.
  - Consideration at the work plan stage for strategically placed deer infrastructure will improve conditions for effective wildlife management.
  - Taking a holistic approach to clearfelling coupes and assessing adjacent areas at the work plan stage to also tackle species that have seeded in, in managed open areas.

Different management options for achieving the plan's objectives were considered against the constraints and opportunities identified during scoping and consultation. The preferred approach is summarised on the Concept map (**Map 3**).

3.0 Management Proposals - regulatory requirements

This land management plan was produced in accordance with a range of government and industry standards and guidance as well as recent research outputs, recognised at the time of its production. A full list of the current standards and guidance which guide the preparation and delivery of FLS Land Management Plans can be found using the link HERE.

3.1 Designations

The plan area forms part of, includes, or is covered by the following designations and significant features.

Table 2

Designations and significant features		
Feature type	**Present**	**Note**
Site of Special Scientific Interest (SSSI)	No	The site has watercourses connecting onto the Ettrick River which is a part of the River Tweed SSSI.
National Nature Reserve (NNR)	No	
Special Protection Area (SPA)	No	
Special Area of Conservation (SAC)	Yes	The Tima Water is designated a Special Area of Conservation – this flows through a minimum intervention coupe at the south of the site at NT 2817 1257
World Heritage Site (WHS)	No	
Scheduled Monument (SM)	No	
National Scenic Area (NSA)	No	
National Park (NP)	No	
Deep peat soil (>50 cm thickness)	Yes	Areas identified as soil type 11b – Calluna, Eriphorum vaginatum Blanket Bog at NT 2891 1333
Tree Preservation Order (TPO)	No	
Biosphere reserve	No	
Local Landscape Area	No	
Ancient woodland	Yes	Two ASNW are present one within the Gamescleuch Linn at NT 2858 1457 and the other along the Tima Water at NT 2811 1274.
Acid sensitive catchment	No	
Drinking Water Protected Area (Surface)	Yes	Two drinking water supplies are located within the block (NT 286 148 & NT 280 140).

The Key Features map (**Map 2**) shows the location of all designated areas and significant features. Any deep peats are indicated on the Soils map (**Map 9**).

3.2 Clear felling

Sites proposed for clear felling in the plan period are identified as Phase 1 and Phase 2 coupes on the Management map (**Map 4**).

Table 3

Clearfell Summary by Phase and Coupe Number			
Phase	Coupe Number	Fell Year	Gross Area (ha)
Phase 1	69013	22/23	36.55
Phase 1	69010	22/23	7.84
Phase 1	69005	23/24	10.57
Phase 1	69003	23/24	8.09
Phase 2	69018	27/28	19.06
Phase 2	69019	29/30	11.31
Phase 2	69024	30/31	3.26
		Total	96.68ha

Table 4

Clearfell by Species									
		Net Area (ha) by Main Species >20% (or MC, MB)							
Coupe Number	Fell Year	DF	LP	NS	SP	SS	BE	MB	Coupe Total (ha)
69013	22/23		0.4		0.1	30.5			31
69010	22/23	0.6		2.2		2.6	0.1	1.3	6.8
69005	23/24			2.14		5.64			7.78
69003	23/24	0.41				3.14			3.55
69018	27/28	1.1		1		13.5			15.6
69019	29/30	0.3		1.02		9.2			10.52
69024	30/31	0.6			1.2	0.6		0.27	2.67
Plan Area Total		3.01	0.4	6.36	1.3	65.18	0.1	1.57	77.92

NB Coupe totals: Table 3 shows gross coupe area / Table 4 & 5 shows net area of species

Table 5

Scale of Proposed Felling Areas										
Total Woodland Area			424.25 ha							
Felling	Phase 1	%	Phase 2	%	Phase 3	%	Phase 4	%	Long Term Retention	%
Net Area (ha)	49.13	11.58	28.79	6.79	77.1	18.17	42.7	10.06	12.43	2.93

3.3 Thinning

Potential sites for thinning are identified on the Thinning map (**Map 5**).

Although not within this plan period this covers an area of 103 ha. The thinning areas represent first-thinning only and is likely to be carried out within phase 3 of the LMP (phase 1 of the next full plan revision).

Thinning will normally be carried out at, or below, the level of marginal thinning intensity (i.e. removing no more than 70% of the maximum MAI, or YC, per year). Higher intensities (no more than 140 % of maximum MAI, or YC, per year) may be applied where thinning has been delayed, larger tree sizes are being sought or as part of a LISS prescription. In all cases work plans will define the detailed thinning prescription before work is carried out and operations will be monitored by checking pre and post thinning basal areas for the key crop components.

3.4 Other 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 of 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.

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

The maximum volume of felling in exceptional circumstances over the plan area covered by this approval is 75 cubic metres per calendar year.

A record of the volume felled in this way will be maintained and will be considered during the five year Land Management Plan review.

[N.B. Trees may be felled without permission if they: are of less than 10 cm diameter at breast height (1.3 m); pose immediate danger to persons or property; are completely dead; or are part of Authorised Planning Permission works or wayleave agreements].

3.5 Restocking

Proposed restocking is shown on the Future Habitats and Species map (**Map 6**).

Table 6

Restocking							
Phase †	Coupe Number	Gross Area (ha)	Proposed Restock Year	Species	Method *	Minimum stocking density	Note
1	69022	1.3*	2023/24	DBI CAR	R	*	*Enrichment planting around existing natural regeneration (Not included in total)

Restocking							
1	69010	7.84	2023/24	GF MB|Open	R	GF 2500 MB|Open 1600	GF Pure crop MB|Open 50:50
1	69023	6.54	2023/24	GF	R	GF 2500	GF Pure crop
1	69003	8.09	2023/24	NS SP|SBI MB|SP|Open	R	NS 2500 SP|SBI 2500 MB|SP|Open 1600	NS Pure crop SP|SBI 50:50 intimate mixture MB|SP|Open Intimate 30:20:50
1	69005	10.57	2023/24	NS|BE SP|SBI SP MB|SP|Open	R	NS|BE 2500 SP|SBI 2500 SP 2500 MB|SP|Open 1600	NS|BE Intimate 50:50 mixture SP|SBI 50:50 intimate mixture SP Pure crop MB|SP|Open Intimate 30:20:50
2	69013	36.55	2026/27	SS|GF SS|LP SP SS MB|Open	R	SS|GF 2500 SS|LP 2500 SP 2500 SS 2500	SS|GF Intimate mixture 50:50 SS|LP Intimate mixture 70:30 SP Pure crop SS Pure crop

Restocking							
						MB|Open 1600	MB|Open 50:50
2	69018	19.06	2028/29	SS DF SP|SBI MB|SP|Open MB|Open	R	SS 2500 DF 2500 SP|SBI 2500 MB|SP|Open 1600 MB|Open 1600	SS Pure crop DF Pure crop SP|SBI Intimate 50:50 mixture MB|SP|Open Intimate 30:20:50 MB|Open 50:50
2	69019	11.3	2030/31	DF SP|SBI MB|SP|Open	R	DF 2500 SP|SBI 2500 MB|SP|Open 1600	DF Pure crop SP|SBI 50:50 intimate mixture MB|SP|Open Intimate 30:20:50
3	69024	3.26	2031/32	GF	R	GF 2500	GF Pure crop

Total	103.22

† recently felled awaiting restock (F) / Phase 1 (1) / Phase 2 (2)
* replant (R) / natural regeneration (NR) / plant alternative area (ALT) / no restocking (None)

If the Restock or natural regeneration should fail to reach 1600 per hectare (Native Broadleaves) or 2500 sph (productive Conifers) the site will be beaten-up to the required planting density. This will be assessed at year 3 and year 5 after planting with beat up by at least year 5.

3.6 Species diversity and age structure

The following tables show how the proposed management of the forest will help to maintain or establish a diverse species composition and age-class structure, as recommended in the UK Forestry Standard. The current woodland composition is shown on Map 8.

Stands adjoining felled areas will be retained until the restocking of the first coupe has reached a minimum height of 2m. Where this is not possible (e.g. due to windblow risk), the planned approach to achieving height separation between adjacent coupes is outlined in section 4.1 – Clear felling.

Table 7

Plan area by species						
Species	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
Sitka spruce	275.5	64.95%	223	52.57%	141.4	33.33%
Other conifers	61.5	14.50%	95.3	22.47%	105.4	24.85%
Native broadleaves	10.7	2.52%	27.7	6.53%	31.8	7.50%
Other broadleaves	1.1	0.26%	5.5	1.30%	5.4	1.27%
Fallow	20.1	4.74%	4.8	1.13%	46.7	11.01%
Open ground	54.6	12.87%	67.2	15.84%	92.8	21.88%
Misc (quarry)	0.7	0.17%	0.7	0.17%	0.7	0.17%
Total	424.2	100.00%	424.2	100.00%	424.2	100.00%

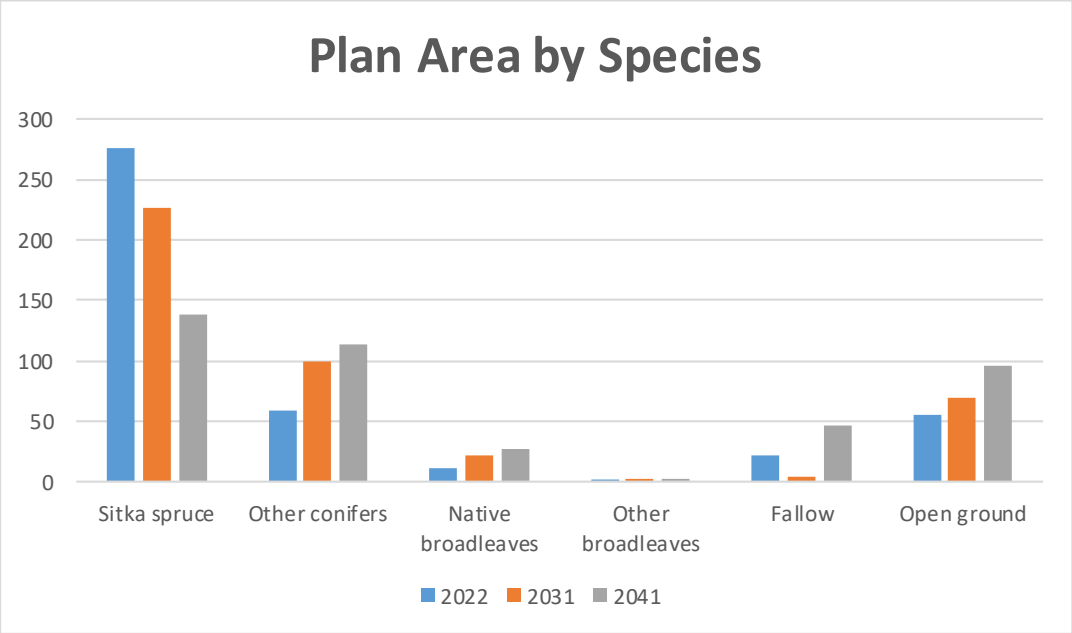

Figure 1, Plan area by species

Table 8

Plan area by Age						
Age Class (years)	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
0 – 10	99	23.34%	80.2	18.91%	54.7	12.89%
11 – 20	0	0.00%	98.9	23.31%	77	18.15%
21 – 40	0.1	0.02%	0	0.00%	98.7	23.27%
41 – 60	243.9	57.50%	167.6	39.51%	0.1	0.02%
60+	3.1	0.73%	3	0.71%	50.5	11.90%
Open | Fallow	78.1	18.41%	74.5	17.56%	143.2	33.76%
Total	424.2	100	424.2	100	424.2	100

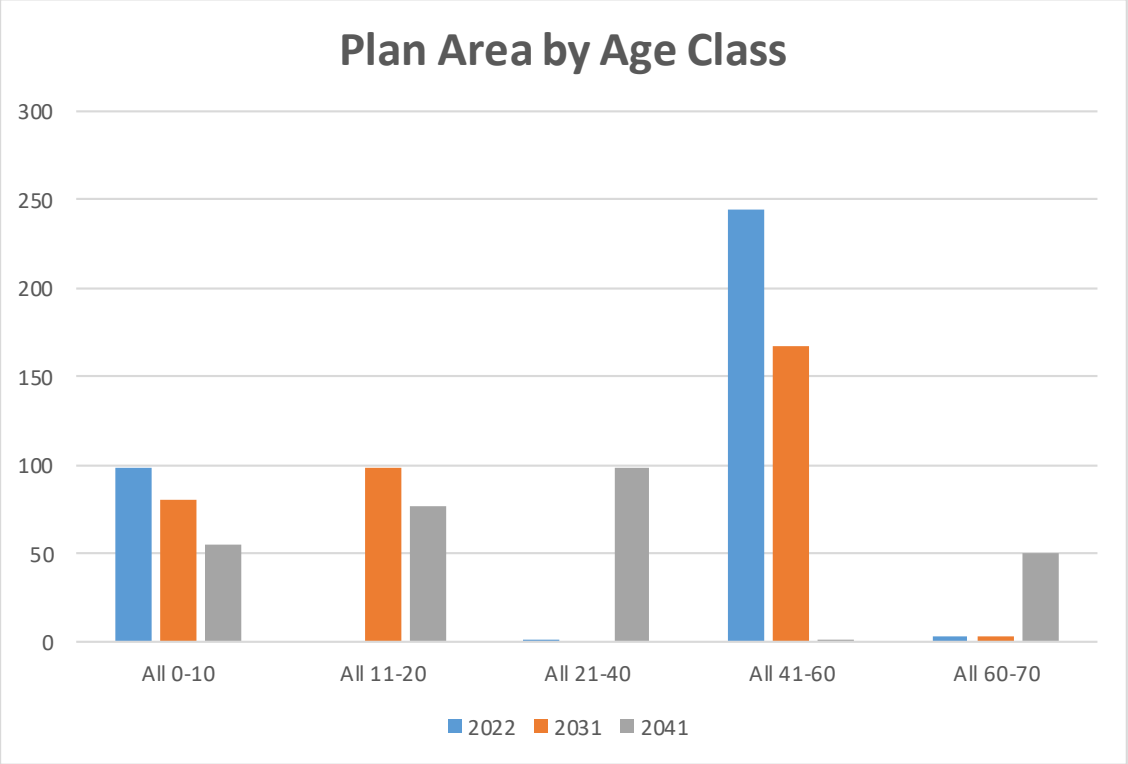

Figure 2, Plan area by age class

3.7 Road Operations and Quarries

Planned new roads, road realignments, road upgrades, new quarrying, and timber haulage routes are shown on the Road Operations and Timber Haulage map (**Map 7**).

Table 9

Forest Road Upgrades, Realignments, New Roads and New Quarrying				
Phase	Name / Number	Length (m)	Year	Operation
3	C223b	1100m	2033/34	Maintenance/Upgrade
3	Gateceluch Hill Road	1280m	2033/34	New road

3.8 Environmental Impact Assessment (EIA)

Any operations requiring an EIA determination are shown in the table below. If required, the screening opinion request form is presented in **Appendix II**.

Table 10

EIA projects in the plan area		
Type of project	Yes / No	Note
Afforestation	No	
Deforestation	Yes	Peat restoration
Forest roads	Yes	
Forestry quarries	No	

3.9 Tolerance table

Working tolerances agreed with Scottish Forestry are shown in **Appendix IV**.

4.0 Management Proposals – guidance and context

4.1 Silviculture

4.1.1 Clear felling

Clearfell and restock has been chosen as the appropriate management type where: Opportunities to convert to Continuous Cover Forestry (CCF) have been missed; CCF is not an appropriate option due to high winds or other climatic factors; and where it is the most efficient option and does not compromise the other objectives of the plan.
Coupes for clearfelling during the plan period (refer to Map 4):

To achieve the UK Forestry Standard of separation between adjacent crops, adjoining coupes should not be felled before the restocking of the first area has reached an average height of at least two metres. We expect this to be achieved in 5 years following planting.
Any unforeseen reduction in separation during the period of the plan will be formally agreed with Scottish Forestry as an amendment. Felling will be undertaken once trees in adjacent restocked coupes have reached 2 m height.

Phase 1 2022-2026

69013
P1973 Sitka spruce and a small component of lodgepole pine to be felled slightly before MMAI due to windblow. Storm Arwen has increased the existing windblow element within this coupe and now incorporates approximately 30% of the coupe total area. The new planned road will not be required for this coupe however, restocking will be left open along the planned roadline which will be constructed 2033/34 in time for the scheduled clearfell of 69015 in phase 3.

Where poorer soils are present nurse-species mixtures of Sitka spruce and lodgepole pine are to be utilised. On the more sheltered sides of the Deephope Hill cap mixtures of Sitka spruce and grand fir are proposed. Some shallow ranker soils are also present where these are apparent Scots pine are to be utilised given the pines tap root. A small area of 11b Calluna, Eriphorum vaginatum blanket bog has been identified with some significant peat depths over 1 m, this area will not be restocked and will be in time restored to peatland habitat alongside the peatland habitat restoration proposals within coupe 69015 (see section 4.6.3).

69010

A mixed coupe consisting of P1974 Sitka spruce, Douglas fir, Norway spruce and Mixed broadleaves previously under long term retention is to be felled within phase 1. This is largely due to the impact of Storm Arwen which has imposed approximately 25% windblow damage to the total coupe area. This damage has also impacted on an FLS walking track which we propose will be reinstated after the clear felling has taken place. Retention of specimen broadleaves will be based on their ecological value and potential future seed source for the restocking.
Site suited native broadleaves will be allocated to the majority of this coupe protected primarily via wildlife management. The increase of native broadleaf here will buffer the fragmented ASNW within the Gamescleuch Linn.
A component of grand fir will be planted close to the forest road for ease of establishment protection and will in the future be managed along with coupe 69023.

69005/69003
Both these coupes comprising P1974 Sitka and Norway spruce are to be felled in 2023/24 and will begin the restructuring of north-eastern slopes of the blocks. Restructuring is required to mitigate the current and upcoming clear fell patches around the recent Statutory Plant Health Notice (SPHN) issued 08/2020. Currently 69003 has circa 5 ha of larch clear fell present and 69005 has circa 2 ha. The coupe redesigns will alleviate adjacency issues along the slope and accommodate easier future operations including restocking, subsequent maintenance and future harvesting.
69003 will also offer the first opportunity to our current neighbours; The Ettrick and Yarrow Community Development Company, access to their conifer block within the Ettrick marshes.

Breaking up this north eastern face into four phased management coupes will reduce impact on peak water flows and mitigate pressure on the flooding target area identified by SEPA. The north eastern lower slopes are also one of the main focal viewpoints of the Gamescleuch Land Management Plan. The restructuring will ease the visual landscape impact of the proposed felling.

Restocking of both these coupes will be 'hot planted' (planted within the next planting season after felling) to accommodate the required height before adjacent phase 2 felling.
A significant effort to diversify the Gamescleuch block with the restock for this coupe and throughout the lower north east face is proposed, alongside this diversification appropriate use of species mixtures are used on the steeper slopes to reduce future interventions with the use of self-thinning Scots pine and silver birch. Accessible Norway spruce along with a mixture of beech where site conditions allow on the upper sections and a minor component of pure Scots pine are proposed. A consistent buffer from the marshes is made up of mixed broadleaf, pine and open ground.

Phase 2 2027-2031

69018

This coupe also has some pockets of SPHN larch (circa. 3.5 ha) clear felled within, creating possible crop stability issues and future operational challenges. Removing this coupe late within phase 2 will allow for the adjacent coupe to grow to the required height. This will also give a further opportunity for our current neighbours; The Ettrick and Yarrow Community Development Company, to access their conifer block within the Ettrick marshes.

Appropriate mitigation around the Private Water Supply point at NT 286 148 will be taken during any nearby operations. The restock aims to buffer this feature with a broadleaf and open ground buffer of at least 50 m as per forest and water guidelines. The remainder of the restock for this coupe is consistent with the rest of the lower north east face aiming to significantly diversify the forest alongside appropriate use of species mixtures to reduce future interventions (self-thinning Scots pine and birch on steeper sections). Accessible Douglas fir on the upper sections and a minor component of Sitka spruce. A consistent buffer from the marshes is made up of mixed broadleaf, pine and open ground.

The strip of veteran Scots pine and beech within management coupe 69020 will be retained as minimum intervention and protected having machine access restricted through this gully.

69019

Comprising primarily P1974 Sitka spruce with a minor element of Douglas fir this coupe will be clear felled slightly past its MMAI to allow for a suitable period to allow the adjacent coupes time to grow to the required height. As with 69003/5 other factors will benefit from the redesign of this coupe including future operations, landscaping and reduced hydrological impacts.

The restock for this coupe is consistent with the rest of the lower north east face aiming to significantly diversify the forest alongside appropriate use of species mixtures to reduce future interventions (self-thinning Scots pine and birch on steeper sections). Accessible Douglas fir on the upper sections along with maintaining the buffer from the marshes made up of mixed broadleaf, pine and open ground and expanding this to form a permanent operational buffer and habitat network along the burn through the middle of the coupe.

69024

Adjacent to and including SPHN areas within coupes 69023 this mixed coupe of P1974 Sitka spruce, Scots pine and Douglas fir is to be felled slightly late to its Maximum Mean Annual Increment (MMAI) fell year (2029) and is proposed to be felled at the end of phase 2 within 2030/31. This is to mitigate adjacency issues between the two phase 1 coupes north and south of this coupe.

Restocking of this coupe will again look to diversify with the use of grand fir. It is assumed that in future revisions of this plan 69023 and 69024 would be merged together and managed as a single unit.

4.1.2 Thinning

No post thinning operations are proposed within the lifespan of this LMP however, coupes 69011, 69012 and 69004 may receive a first thin towards the end of phase 2 although its likely these would be grouped together into phase 3 (phase 1 of the next plan). For completeness these are included within Map 5.

4.1.3 Low Impact Silviculture Systems (LISS) / Continuous Cover Forestry (CCF)

No CCF or LISS are officially designated within this LMP. However, the Scots pine and birch mixtures associated with the restock design are proposed in such a way to remove the requirement for intermittent interventions therefore reducing operational machinery around the environmental sensitivities of the Ettrick marshes to the north east and the Ancient Semi Natural Woodland (ASNW) along the lower slopes of Gatecleuch hill.

4.1.4 Long term retention (LTR) / Minimum intervention (MI) / Natural reserve (NR)

There are three areas where Long Term Retention (LTR) is the chosen management type: 69009 and 69021 remain as LTR as with the previous plan. These areas will provide an important break from the visual impacts of clearfelling and also give diversity in the age structure they also buffer the ASNW within 69008, with minimal undesirable seeding in being seen. This structure is providing good raptor nesting potential, red squirrel habitat and a diverse and interesting landscape vista from the local viewpoints.

69025 further contributes to habitat retention for various species whilst other surrounding areas are either being felled or are currently establishing. This particular area also provides an important local screen to mitigate the visual impacts of clearfelling.
These areas will remain under LTR with the proposed felling dates indicated on map 4. These areas will be under review with each revision for futre suitability to reamin as LTR.

The minimum intervention (MI) management coupes have been chosen as being the most suitable management for areas primarily where an already established broadleaf network exists such as throughout the Gamescleuch Linn Burn (69008) and the Southern areas of the block along the Tima Water (69001). Where low levels of disturbance will benefit soil, water quality and wildlife, MI will be employed such as riparian areas and areas where water supplies are present.
Where non-natives seed in and are deemed inappropriate these will be removed when an adjacent clearfell coupe is being removed.
Refer to Map 4.

4.1.5 Tree species choice / Restocking

The first objective of the plan incorporates the development of a woodland with a diverse mix of tree species for timber products. Growing conditions are variable across the forest, with best conditions both in terms of soil nutrient and moisture status located alongside climatic factors such as exposure are found through the central, northern and north-western areas. These are areas where diversification will be focused to adapt and mitigate the effects of climate change. Through the lifespan of this plan the richness and evenness (Shannon Index) of tree species increases and dependency on a single species decreases (See table 11 below).

Table 11

Shannon Index score throughout plan lifetime			
	Species richness	% of dominant species (planted)	Shannon Index score
Current	15	64.9%	0.81
Year 10	16	53.1%	1.3
Year 20	16	32.6%	1.49

Using Ecological Site Classification data (2020), species suitability has been assessed. All future restock species fall within either the suitable or very suitable category and where this is a replacement to Sitka spruce, the associated Yield Classes are either matching, increased or within a minimum of 75% of the previous crop.
Refer to Map 6.

All non-productive broadleaf planting will be native to the area and should complement and/or enrich existing naturally growing scrub and woodland to give the most ecological value.

The Restocking Strategy for Scotland's National Forest Estate explains that we will minimise chemical usage in restocking (insecticides and herbicides) by considering options at the site scale, and using tactics such as delayed planting to achieve this.

4.1.6 Natural regeneration

There should be a preference for natural regeneration of broadleaf areas (to maintain provenance and improve the chances of establishment) but where this is unlikely or has not been successful then these areas should be planted/beaten up to the required stocking density and site requirements. This is particularly relevant to coupe 69022 where broadleaf natural regeneration is already establishing but will require beating up in due course to maintain 1600 stems/ha.

It is expected that some of the riparian zones, designed open ground and broadleaf areas will fill in with natural regeneration of both conifers and broadleaves. This will be managed in such a way as to ensure that, where practicable, it does not significantly impose a negative impact upon the objectives of the plan or create a negative impact upon the watercourse in terms of shading and acidification.

There are some productive sites where natural regeneration is occurring. These will be monitored and recorded in the FLS sub-compartment database. Where this is the desired species, we will endeavour to use it to establish the required stocking density. If stocking density is too low it will be beaten up by year 5. If the natural regeneration is too dense it may be necessary to clear and restock. Where the natural regeneration is not the desired species it will be considered against the plan objectives and tolerance table and either accepted (with a plan amendment if necessary) or removed.

4.1.7 New planting

No new planting is present within the Gamescleuch LMP unit.

4.1.8 Protection

Deer

There is a significant challenge to establishing broadleaves and soft conifers due to the impacts of deer, especially on the smaller/secluded SPHN felled sites. One of the critical success factors of the plan is to ensure young trees are protected from browsing damage.

Gamescleuch forms a part of the wider Craik Deer Management Unit (DMU) with Roe deer being the frequently recorded species.

The key objectives within the DMU are:

- To enable re-stocking to take place without the need for deer fencing and to achieve the appropriate stocking density at year five in accordance with OGB 4.
- To maintain a sustainable deer population.

To achieve this, the agreed target laid out in the South Region Strategy document is to maintain deer populations at sustainable levels and maintain impact levels in accordance with FLS policy of less than 10% on all commercial tree species. Currently the three year average browsing impacts across this DMU are within target objectives.

Cull targets have been set in line with population models, should deer impact monitoring suggest rises in impact levels the cull target may be revised to reduce population levels below these estimates.

Tree Pests and Diseases

Gamescleuch has recently been served a Statutory Plant Health Notice following 4 positive confirmations of the algae-like water mould *Phytophthora ramorum.* All larch served with this notice have now been felled. Therefore larch will not be planted during the period of this plan due to the presence of *P. ramorum*.
Restocking of larch felled areas will follow current best practice and policy on timing and species choice.

No other tree health issues have been recorded within Gamescleuch.

Fire

FLS continues to work closely with the Scottish Fire and Rescue Service (SFRS) to prevent and tackle wildfires that threaten Scotland's National Forests and Land. FLS support SFRS in their lead role for fire prevention and suppression through creating annual fire plans, maintaining a duty rota, and providing additional logistical support. FLS's primary objective is always to protect people's health, safety and wellbeing.

4.1.9 Road operations, Timber haulage and other infrastructure

Map 7 shows the existing forest road network, planned new roads, main egress points, and agreed Timber Transport Routes.
A new forest road (1280 m) will be required to service coupe 69015 within phase 3. It is not planned that this roadline will be constructed within phase 1 or 2 however, the restocking of coupe 69013 will be left open to accommodate the future roadline.
Future planned maintenance and upgrades relate to roadline C223b which again will not be required until phase 3 of the plan to facilitate lower access to coupe 69015.

The egress of the Gamescleuch forest road network lands onto the B709 which is an agreed timber transport route.

4.2 Biodiversity

4.2.1 Designated sites

Special Area of Conservation – River Tweed

The Tima Water forms a part of the River Tweed Special Area of Conservation. This runs through the Gamescleuch land management unit at its most southern boundary. This area is currently well established, predominantly birch, mixed broadleaf to be managed as minimum intervention (see 4.1.4). It already forms a corridor providing connectivity from the adjacent ASNW and in time will look to be expanded to provide better broadleaf riparian habitat throughout the connecting watercourses Gatecleuch Sike and White Sike.
Reducing the dense shade from conifers around these areas and restocking with broadleaf and open ground will improve the overall quality of water feeding into the SAC.

Special Sites of Scientific Interest – River Tweed

Although not within the land management unit the River Tweed SSSI is connected via internal water courses. These areas will follow similar management to the above; either remaining as minimum intervention, being restocked with broadleaf and open ground or left open with an allowance for successional natural regeneration. The latter being the favoured approach for areas around Gamescleuch Hill where broadleaf establishment and maintenance would prove unviable.

4.2.2 Native woodland

The plan seeks to protect and enhance existing areas of native woodland. Future new planting of mixed broadleaf are strategically located where there will be maximum habitat connectivity, and where it will enhance the landscape and also where protection from deer will provide minimal limitations. By the end of the 20 year plan period native woodland will make up 7.5% of Gamescleuch (currently 2.5%). This will be predominantly mixed broadleaf (site suited according to the appropriate National Vegetation Classification) alongside open space. Once established the broadleaf areas will be managed under minimum intervention. Monitoring will ensure that these areas are maintained in good condition.

4.2.3 Ancient woodland / Plantation on Ancient Woodland sites (PAWs)

Two small fragmented pockets of ASNW exist within Gamescleuch. The main area located within the Gamescleuch Linn (69008) is comprised primarily of downy birch with a notable component of hazel. The other ASNW area is located to the south within 69001 and is comprised primarily of birch. Both of these areas are to be managed as minimum intervention.

4.2.4 Protected and priority habitats and species

All forest management operations involve a planning process before work commences which includes checks for wildlife and important habitats. Work plans will be adjusted if necessary to avoid disturbance, and opportunities to further protect species or enhance habitats will be identified.

Red squirrel

FLS has a single licence to cover forest management activities that may affect red squirrels on the national forest estate (NFE). This is in accord with the Scottish Biodiversity Strategy's aim to resolve species management issues. All works within the Plan area will follow the assessment and mitigation actions set out as conditions of this licence. As such all felling operations will undertake environmental coupe checks prior to any operations being carried out.

Although not within a Priority Area for Red squirrel Conservation (PARC), Gamescleuch is recognised as a part of Craik Forest; which is a well-known red squirrel stronghold. To mitigate the impacts of forestry operations across the land management unit a number of

strategies have been utilised such as; smaller management coupes to offer alternative neighbouring habitat, long term retentions and minimum intervention areas.
Future red squirrel conservation has been considered with a range of favoured food sources being planted throughout the restocking of the plan period, by 2041 favoured food sources (Douglas fir, pine and Norway spruce) will have increased by 8%.

Raptors

As well as some stands being retained slightly past their MMAI, stands of LTR throughout the forest will also offer nesting sites for raptors including goshawk, buzzard, and potentially golden eagle. Opportunities for further LTRs will be considered during the delivery of this plan.

Priority habitats

The priority habitats identified in the plan area (see Appendix I – Biodiversity) are all incorporated into networks of open ground or native woodland, ensuring protection and improving ecological connectivity, managed as open or minimum intervention. Any non-native colonisation will be managed during felling operations; when a priority habitat is adjacent to a clear fell coupe, sizeable non-native regeneration will be removed along with the clear felling. After felling operations, planting schemes will be designed around any priority habitats that are revealed. This includes species rich groundwater dependent terrestrial ecosystems (GWDTEs), which will also be protected during road building and any other forest operations using current best practice.

4.2.5 Open ground

Currently open ground contributes to 12.9% of the plan area, over the next twenty years this is expected to increase to 22.5%. This is primarily focussed alongside riparian areas integrated with pockets of native broadleaves and on Priority habitats. Where managed open is allocated there is an expectation that resources will be allocated to maintaining it as open. A combination of techniques will be used to maintain the open condition, including vegetation management and scrub removal. Within this plan period an area of deep peat located within the saddle of Deephope Hill is proposed not to be restocked and in time restored to a functioning peatland hydrological unit (see 4.6.3) alongside a larger area within the saddle of Gatecleuch Hill.
The plan area also incorporates areas of successional open, where natural regeneration will be tolerated. This is located within rides, upper margins and along riparian zones of side tributaries, where deer control will be very challenging. Monitoring of these areas will allow us to identify any significant changes, and Scottish Forestry will be notified if these require amendments to the plan.

Fallow clearfell sites will contribute to transitional open space throughout the forest.

4.2.6 Dead wood

Opportunities for retaining or creating deadwood will be identified during the planning of all felling and thinning works, favouring areas with the highest deadwood ecological potential. Valuable deadwood and deadwood areas will be marked on contract maps. Where it is safe to do so, standing mature dead trees will be retained as these offer excellent potential for a range of species.
This is especially relevant with the aftermath of Storm Arwen and other storms and areas such as along the watercourse of 69016 will be considered for retention of deadwood at the operational stage.

4.2.7 Invasive species

All works carried out will adhere to strict biosecurity following the guidelines laid out in the 'Forestry and Water Scotland - Know the Rules' booklet. Alongside this, should any Statutory Plant Health Notices be issued biosecurity protocols from internal and Scottish Forestry guidelines will be followed.

FLS will continue to support the control of grey squirrels being co-ordinated by Saving Scotland's Red Squirrels.

No known invasive species are present within Gamescleuch however, we will endeavour to control any patches of invasive non-native plants that are observed within the plan area.

4.3 Historic Environment

Refer to Map 2.

Our key priorities for archaeology and the historic environment are to undertake conservation management, condition monitoring and archaeological recording at significant historic assets; and to seek opportunities to work in partnership to help to deliver Our Place in Time: the historic environment strategy for Scotland (2014) and Scotland's Archaeology Strategy (2015). Significant archaeological sites will be protected and managed following the UK Forestry Standard (2017) and the FCS policy document Scotland's Woodlands and the Historic Environment (2008). Harvesting coupes, access roads and fence lines will be surveyed prior to any work being undertaken in order to ensure that upstanding historic environment features can be marked and avoided. At establishment and restocking, work prescriptions remove relevant historic environment features from ground disturbing operations and replanting. Where appropriate, significant historic assets are recorded by archaeological measured survey, see active conservation management and may be presented to the public with interpretation panels and access paths. Opportunities to enhance the setting of important sites and

landscapes will be considered on a case-by-case basis (such as the views to and from a significant designated site).

The Regional Historic Asset Management Plan includes conservation management intentions for designated historic assets on the National Forest Estate. Details of all known historic environment features are held within the Forester Web Heritage Data and included within work plans for specific operations to ensure damage is avoided. Significant historic environment features will be depicted on all relevant operational maps.

Areas of historic environment interest should be checked both on FLS's internal historic environment records and also with the Council's HER prior to the commencement of forestry activities. Any upstanding features should be clearly marked, both on the ground and on operational maps. Care should be taken to avoid any damage to surviving structural elements.

4.3.1 Designated sites

No designated sites are present within Gamescleuch.

4.3.2 Other features

An old road is noted as a locally important feature located at NT 279139. No operations are planned within the immediate proximity of this feature however, should any changes or emergency works be required that would potentially impact on this feature the workplan process will highlight its presence before operation commencement and appropriate machine buffers will be marked out and allocated during operations.

We will continue to work with HES, the Scottish Borders Council archaeologist, and the local community to protect, monitor, record and promote the local historic environment within the plan area.

Refer to Map 2 which shows all heritage features and Appendix V details all features in text.

4.4 Landscape

4.4.1 Designated areas

The Gamescleuch LMP unit sits wholly within the Landscape Character Type (LCT) 96 Southern Uplands Forest and is adjacent to LCT 113 Upland Valley with Pastoral floor – these are detailed in Appendix I - Topography and landscape. It is however, worth noting that LCT 113 doesn't quite fit with the Ettrick marshes and stands apart from other landscape character types as its own unique and somewhat wild character. The semi-natural, mixed wet

broadleaf woodland lends itself to an intimate small scale landscape experience with enclosed views and only glimpses of the wider valley slopes behind.
Gamescleuch is visible from two main viewpoints within the local area; looking south-east from the B709 and looking east from the Ettrick village. Great consideration has been given to the visible north western slopes from Viewpoint 1 with smaller management coupes than previously designed being implemented, along with a higher diversity of species (Spruce, pine, and various broadleaf) and silvicultural restocking methods (intimate, block and row mixtures) are also being proposed for restock. This will mitigate the loss of larch (through SPHN fellings) and move away from the current predominate single species structure, this will give visual diversity through seasonal color change and variation in texture across the slope. The lower slopes are also proposed to be restocked with a pine and broadleaf mixture along with open ground to act as a sympathetic visual transition from the marshes below to the productive species above.
From viewpoint 2 the restock again is proposed to improve the future landscape dynamic with a variety of species choices in the immediate and long term restocking vision. A large clearfell coupe is proposed on Deephope Hill within coupe 69013 however, this is still in keeping with the local and wider hill top plantation management strategies. Although out with this land management plan it is envisioned that the two triangles that fall over the slope from coupe 69013 into 69012 would be in the future managed along with 69012.

Refer to map 1 for viewpoint locations, map 2 for landscape designations and Appendix VI for digital 3D visualization models.

4.4.2 Other landscape considerations

The visual impacts of clearfell management have been raised by some of the local residents and where possible these have been taken into consideration. The primary areas of concern are around Gamescleuch Linn and the lower slopes below Deephope. Unfortunately Storm Arwen has made leaving some of these areas as Long Term Retention unviable due to now being heavily windblown – alongside the potential loss of forest timber product the windblow has also caused issues with forest path infrastructure. This is mainly focused within coupe 69010.

Consideration has been given to mitigate the impact of the clearfell areas adjacent to neighbours boundaries; 69010 has been designed to be as small as practicable and restocked as soon as possible after felling. 69009, 69021, 69025 will remain as Long Term Retention (fell years beyond their MMAI; 2051/52, 2044/45 and 2054/55 respectively). Furthermore coupe 69008 will be managed as minimum intervention (see 4.1.4).

4.5 People

4.5.1 Neighbours and local community

Due to local and national restrictions a face-to-face consultation was not viable at the time of scoping therefore letter drops to local residents along with localised signage was used to reach the local community to gather thoughts and comments on draft proposals. This was captured via emailed correspondence, site visits with the public and an online consultation survey which ran for approximately 6 months.

Several neighbours have taken an active interest in the development of the plan and their aspirations have been incorporated where they do not conflict with the objectives of the plan and are consistent with FLS's approach to land management.

See **Appendix III – Consultation Record** for both statutory and non-statutory feedback and FLS response to these.

4.5.2 Public access

Visitors are welcome to explore FLS land, and will only be asked to avoid routes while certain work is going on that will create serious or less obvious hazards for a period (e.g. tree felling). Scotland's outdoors provides great opportunities for open-air recreation and education, with great benefits for people's enjoyment, and their health and well-being. The Land Reform (Scotland) Act 2003 ensures everyone has statutory access rights to most of Scotland's outdoors, if these rights are exercised responsibly, with respect for people's privacy, safety and livelihoods, and for Scotland's environment. Equally, land managers have to manage their land and water responsibly in relation to access rights and FLS will only restrict public access where it is absolutely necessary, and will keep disruption to a minimum.

There is a Right of Way (ROW) [SBC Ref: BE123] that runs through the site starting at Deephope; NT 278 137 and leaves the site at the saddle between Gatecleuch and Gamescleuch Hill; NT 294 137. This right of way was raised within the scoping exercise and is an important access track for the local community both historically and currently. The upper section of the track runs through a recently restocked area with the ROW itself being maintained open. The track has recently undergone some maintenance with shrubs being cut back from the beginning of the upper session. Access through the march fence at the egress of the track has also been improved.
The ROW track condition will be monitored again at the 5 year review stage of this LMP.

A recently instated trail that connects the forest road at NT 284 144 to the Gamescleuch Linn bridge at NT 284 146 has been severely blocked and damaged due to windblown trees caused by Storm Arwen. It is proposed that once the area (69010) has been clearfelled this track will be reinstated.

Refer to map 2 for all trail locations.

4.5.3 Renewables, utilities and other developments

A radio mast has recently been installed on Deephope Hill. This mast was part of the Scottish 4G Infill Programme which is a Scottish Government initiative to extend 4G coverage beyond commercial deployment the S4GI only deals with complete not spots, and does not deliver coverage on any network.

4.5.4 Support for the rural economy

Gamescleuch is part of the local landscape that attracts visitors to the Ettrick area, who take advantage of local businesses and services. It also provides alternative looped walking for visitors staying in the local area. Careful forest design and responsible delivery of forestry operations will provide a positive visitor experience and encourage return visits to the area.

FLS supports a sustainable rural economy by managing the national forests and land in a way that encourages sustainable business growth, development opportunities, jobs and investment.

4.6 Soils

4.6.1 Protection and Fertility

There will be minimal soil disturbance and machine movement on sites with clayey soils to reduce the risk of compaction or damage to the soil structure. Brash mats (or alternative measures) will be used to protect sensitive soils. Felling residue will usually be left on site to allow nutrient recycling, with consideration for the practicalities of restocking. However where soil health, in terms of nutrient recycling, will not be negatively impacted and there is a market value brash recovery will be explored.

4.6.2 Cultivation

Where required, the choice of ground cultivation technique will consider the short-term benefits for establishment against any long-term side effects on tree stability, access for future forest operations and the environment. There will be a preference for the least intensive technique.

4.6.3 Deep peats

FLS is preparing a Peatland Restoration Strategy which will be published in April 2022. (incorporating the 'FES Lowland Raised Bog and Intermediate Bog Strategy', 2013). In the interim, we will take a precautionary approach to restocking on deep peat soils, following the principles laid out in the FCS practice guide 'Deciding future management options for afforested deep peatland', in particular where there is a 'presumption to restore'.

Sites for which there is a 'Presumption to restore' are defined as:

- Habitats designated as qualifying features in the UK Biodiversity Action Plan, or on Natura sites, Ramsar sites, Sites of Special Scientific Interest (SSSI) or National Nature Reserves (NNRs);
- Sites or parts of sites where restocking is likely to adversely affect the functional connectivity (hydrology) of an adjacent Annex 1 peatland habitat (as defined in the EU habitats Directive) or a habitat associated with one;
- Sites where deforestation would prevent the significant net release of greenhouse gases

Some peat types (8a, 8d, 9a, 10a, 10b, 14, 14h, 14w) are classed as 'Scenario A' soils: edaphically unsuited to woodland. Additionally, 10a and 10b peat types are associated with raised bog habitats. Lowland raised bog and blanket bog are UK BAP priority habitats and therefore a presumption to restore. In the LMP process, by default we will not commercially restock areas where Scenario A peat types dominate, and will include such areas for further assessment for either peatland restoration, or manage as native broadleaf or peatland edge woodland (PEW).

After areas for which there is a presumption to restore are identified, the remaining afforested peatlands will be investigated, looking for evidence to support replanting, as per the FCS Practice Guide. If evidence is found that they will clearly support good growth of Yield Class 8 or more, then they will be restocked. If no evidence is found, they will either be

restored, if this is considered to be achievable, or if not, e.g. on slopes of greater than 5%, have a low density native woodland established (PEW).

Areas within the 11b soils at Gamescleuch have been identified to have peat depths of > 1m this is accompanied by exceptionally poor tree growth, typical of trees planted on deep peats. Current Yield classes for Sitka spruce and lodgepole pine within the deep peat areas are recorded as YC 6 and 2 respectively. These areas are proposed to not be restocked and restored once the whole peatland unit has been felled. The first section within coupe 69013 will be left initially open (appx. 5 ha), once the deep peats have been felled within coupe 69015 the whole peatland unit (appx. 19 ha) will then be restored.

For reference see; Appendix VII - Future management of afforested peatlands and map 9 – soils.

4.7 Water

4.7.1 Drinking water

All private drinking water supply points (and pipes) are recorded as a layer in our Forester Web GIS (included in Map 2). This is consulted during the work plan process for all forest operations to ensure their protection. Affected neighbours will be consulted prior to any works commencing. Features will be clearly marked on all contract maps, as well as on the ground. Within the lifespan of this LMP the water supply located within coupe 69018 is impacted by a clearfell coupe. The design of the future forest for this coupe has incorporated an open space and broadleaf buffer of at least 50m around the supply points to minimise future disturbance.

4.7.2 Watercourse condition

All forestry operations will meet the requirements of the UKFS Guidelines on Forests and Water.

The main water course running through the site (Gamescleuch linn) is currently buffered with either broadleaf and open space or open successional open space, all other minor tributaries to either the Tima Water or the Ettrick are buffered with either broadleaves and open ground or open successional ground.

4.7.3 Flooding

There are no specific flood prevention measures within the plan area at this time however, the scale and timing of felling in the forest (to maintain high levels of tree cover in the catchment to help reduce peak flow), along with an increasingly diverse age structure, the

separation of forest drains from watercourses to help slow the flow through areas of riparian broadleaves and in time the restoration of the peatland unit in the saddle of Deephope and Gatecleuch Hill (to hold water in the upper catchment) are likely to have a beneficial impact on downstream flood risk. Accumulatively, these techniques will help reduce flood risk at Selkirk and Ettrick. The proposals in this LMP aim to have a positive effect on flooding.

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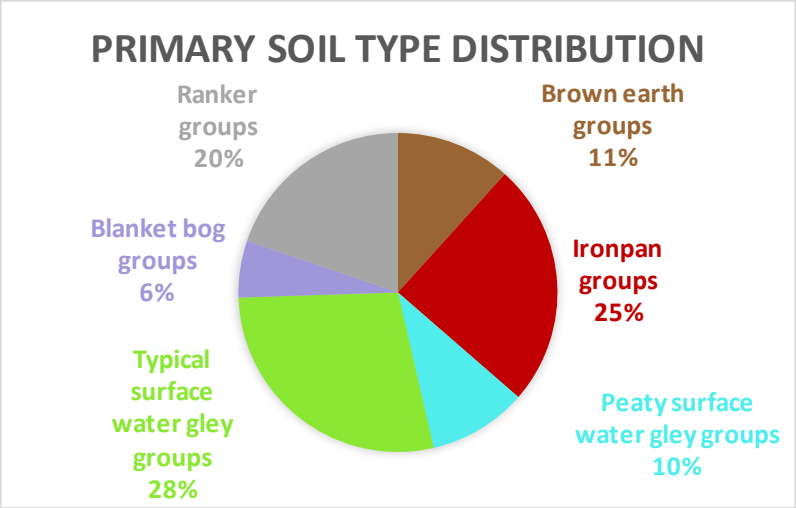
Appendix I: Description of Woodlands

Description of woodlands
Topography and Landscape
Gamescleuch, located in the Scottish Borders, is situated approximately 1 km east of the small village Ettrick, with the nearest larger towns being Hawick (East), Selkirk (North-East) and Moffat (Souht-West) all equidistant at approximately 22 km. The south of the site lies between two privately owned forestry plantations; Midgehope and Glenkerry to the west and Craik Forest to the South and East. Gamescleuch lies predominantly within a north westerly aspect overlooking the approach road to Ettrick and the Ettrick village itself. The south of the site has its highest point, which rises to 477 m (a.s.l.) this incorporates the entirety of Gatecleuch Hill with the associated Deephope Hill (440 m), the lower slopes of these form particuarily steep ground between the two burns; White Sike and Gatecleuch Sike. The north of the site comprises the western slopes of Gamescleuch Hill (454 m) this forms a complex of 4 summits decreasing in height down to 382 m. The north-western lower slopes again feature notable steep ground which stretches across the entire north western face between the burns Gamesclueuch Linn and Annelshope Burn. Collectively these features contribute to the large scale, rolling landform typical of the area. The summits are primarily dominated by mature conifer with the exception of some recent clearfells at the establishment stage. The dark conifer is broken in part by alternative lighter conifer species with scattered intimate blocks and a lower frontage of lighter green broadleaf components are present throughout the western and southern lower elevations. Unique to the area is the lower lying pastoral valley to the west of the site comprising an intimate mixture of pastoral and wooded marsh land known as the Ettrick marshes. The low scrubby broadleaf composition is a striking and a complimentary contrast to the conifer slopes above. This area has the Ettrick water running through west-east. The wider local landscape can be divided into a north and south grouping with the north being made up of rolling hills and smooth slopes predominantly managed as rough pasture with corridors of broadleaf along riparian areas and roadsides, with a relatively large network of broadleaf woodland running along the valley floor, lower slopes and up through Thirlstane Burn gully. The southern grouping is dominated with commercial coniferous forestry with pockets of bare hill top reserved for rough grazing ground. The site falls within one Nature Scot Landscape Character Types (LCT); LCT 96 – Southern Uplands with Forest – Borders

Description of woodlands
Key Characteristics • Large scale rolling landform with higher dome or cone-shaped summits. • Dominant coniferous forest cover characterised by Sitka spruce plantations with occasional areas of pine and larch. • Dispersed settlement pattern of farmsteads and forestry buildings, mainly within sheltered valleys. • Scattered pockets of past land use from prehistoric to post-medieval times. • Simple, uniform character. • Strong sense of enclosure, quietness and tranquillity. The site is adjacent to the following LCT and is included for completeness; LCT 113 – Upland Valley with Pastoral Floor *Key Characteristics* • Glaciated valleys with moderately to strongly sloping sides and flat floor modified by river bluffs and glacial moraine. • Improved pastures with occasional small woodlands and tree lines on valley floors. • Rough unimproved grazing, heather moorland or coniferous forest on valley sides. • Scattered stone built villages with farmsteads and dwellings dispersed along river terraces, lower valley sides and tributary valleys. • A simple, distinctive landscape strongly enclosed by uplands with intermittent long views along valley corridors. These along with other land based designations are detailed on Map 2 The key viewpoints of the forest can be seen on Map 1 and digital visualizations can be seen in Appendix VI.
Geology and Soils
The superficial drift deposits found throughout the mid to lower slopes of the western areas of Gamescleuch are primarily consistent with a blue grey boulder clay with variable sand content. The further west and into the marsh area a transition into alluvial drifts associated with the valley complex contain a silt, sand and gravel deposition. The soil types reflect the parent material and are primarily consistent of surface water gleys and upland brown earths. Typical to the area the bedrock is closer to the surface with higher elevations of which, is primarily composed of the Ettrick Group of Sandstone and interbedded mudstone. Within Gamescleuch this is the Glendearg Formation whereby the sandstone (wacke) is composed of sparse red and grey graptolitic mudstones. The surface bedrock is evident within the skeletal shallow ranker soils. Other soil types reflect the topography and climate of the site with exposed hollows at higher elevations including peaty blanket bogs and peaty surface water gleys. Intergrade ironpans are also primarily located on the steeper slopes of the site.

Description of woodlands

The figure below details the composition of primary soil types across the site



Soils types within the forest block are shown on Map 9

Climate

The site has a cool, moderately exposed and wet climate.

Accumulated temperature (day-degrees above 5°C)
Min: 1186, Max: 1572, Mean: 1402.2

Moisture Deficit (mm)
Min: 64, Max: 102, Mean: 85.1

The climate of the LMP area is highlighted pink on the table below

Moisture Deficit (mm)	Accumulated temperature (day-degrees above 5°C)									
		>1800	1800-1475	1475-1200	1200-975	975-775	775-575	575-375	375-175	<175
	>200									
	180-200	Warm	Dry							
	160-180									
	140-160									
	120-140	Warm	Moist		Cool	Moist				
	90-120									
	60-90		Warm	Wet						
	20-60				Cool	Wet		Sub-Alpine		
	<20								Alpine	

Climatic Zones in Great Britain (shading indicates combinations not present)

Description of woodlands

Hydrology

Map 2 shows all watercourses, open water, and recorded water supplies.

The forest sits in the Solway Tweed river basin district.

Water quality

Bodies of surface waters (as identified by SEPA) in or close to the plan area:

Name: Tima Water **Overall Condition:** Good

Name: Ettrick Water **Overall Condition:** Moderate

Impacted condition / Responsible pressures (Responsible activity):

Overall Ecology/Biological elements | Alien species | Fish\Fish ecology | Hydromorphology\Morphology

Flooding

Selkirk is an area downstream prone to flooding as recognised in the SEPA Flood Risk Management Strategy Natural Flood Management is part of the ongoing Selkirk works. Gamescleuch is outwith but upstream of the Potentially Vulnerable Area (13/04). Ettrick village is an additional location listed as an area prone to flooding in the second FRM cycle. We have considered the potential effect of our activity on flooding at both these locations.

Water supplies

Two Private Water Supplies (PWS) are located within Gamescleuch. These two supplies are registered as servicing 2 nearby properties.

Windthrow

Map 10 illustrates the DAMS measurements for the Plan area. The greatest exposure is on top of Law Kneis, Gamescleuch Hill and Gatecleuch Hill where the DAMS ranges from 20-21. The lowest score is 11, found along the bottom gullies of Gamescleuch Linn, the egress of Annelshope Burn and southern areas adjacent to the Tima Water. The average DAMS Score across the site is 14 which is deemed as moderately exposed.

The recent Storm Arwen event in November of 2021 caused a relatively significant proportion of damage to the Gamescleuch block with 15.1 ha being severely impacted – 4.3% of the current forest area.

Adjacent land use

Description of woodlands
To the south of Gamescleuch there are two privately managed woodlands; Midgehope and Glenkerry to the west and Craik Forest to the South and East. These woodlands are primarily composed of commercial conifer. To the east of the site a woodland creation scheme spans over 400 hectares, this is primarily composed of conifer with broadleaf and open space. The western march of the site is occupied by farm buildings, pasture and an established woodland creation site. A recent Community Asset Transfer scheme has recently taken place and the Ettrick Marshes are now owned and managed by the Ettrick and Yarrow Community Development Company.
Public access
A Right of Way is present within Gamescleuch; BE123, this begins from Deephope and leaves the forest block between the saddle of Gatecleuch and Gamescleuch Hill, eventually leading onto Buccleuch. A network of trails also have been maintained recently and link into existing trails throughout the Ettrick Marshes. A trail that links the Forest road at NT 285 144 to the bridge over the Gamescleuch Linn was unfortunately extensively damaged as a result of Storm Arwen. Post felling of coupe 69010 we will look to reinstate this trail as soon as possible. Gamescleuch is classed as a Passive zone by Forestry and Land Scotland. The passive zone provides the wider setting, it is where land management is less focused on recreation and often more on management for other objectives. Map 2 show the location of promoted trails.
Historic environment
Limited archaeological features are present within Gamescleuch. The first edition OS map reveals a short length of an old road or track at Deephope (Canmore #341610). The western boundary shares its march with a sheepfold (Canmore #354377) Both of these features are undesignated features of local importance. A 5 metre buffer has been employed around the road/track feature. Historic environment records for the forest are shown in Appendix V and on Map 2.
Biodiversity
Few biodiversity sightings have been recorded within Gamescleuch however, important species are resident. Recorded sightings include badger along with multiple raptor nests. External reports indicate red squirrel present within the northern and western areas along with frequent anecdotal reports of red squirrel present within the Gamescleuch Linn area.

Description of woodlands

All the burns within the site flow into either the Ettrick Water or Tima Water. Ettrick Water is designated as a Special Area of Conservation and a Site of Special Scientific Interest (both associated with the River Tweed), Tima Water is also designated as a Special Area of Conservation.

Priority UKBAP habitats are scarce within the site however there does exist small fragments of Blanket Bog, Fen Marsh & Swamp, Upland birch and Upland Heathland.

Two fragmented areas of Ancient (of semi natural origin) Woodland are present within Gamescleuch. These are located within the lower gully of Gamescleuch Linn and within the south of the block along the Tima Water. Both of these components are consistent with Upland Birch and likely to be W4 – *Betula pubescens-Molinia caerulea.*

Deadwood ecological potential is mostly low throughout the block however it is deemed medium on the steep eastern slopes and high throughout the burns.

Open ground is currently at 12.8% of the plan area.

Invasive species

No known invasive species are present within Gamescleuch.

Woodland composition

There is a moderate diversity of tree species, with a forested area Shannon Index score of 0.81. This comprises 64% of Sitka spruce, open space is at 12%, alternative conifer comprises 14% and broadleaf is currently 2.7%. A <5% fallow landbank is also present.
See section 3.6 above for Species Diversity and Age Structure.

Average yield class distribution can be seen in the table below. Generally it can be seen that the site is quite productive.

Species	Weighted (by area) Average Yield Class
Douglas fir	10
Hybrid larch	10
Lodgepole pine	2
Norway spruce	14
Scots pine	8
Sitka spruce	16

The standing mature crop at Gamescleuch is primarily in its first rotation having been planted in the early to mid 1970's with the younger areas being in the second rotation.

Description of woodlands
Currently the primary management type of Gamescleuch is patch clearfell. The current species composition of the forest is illustrated on **Map 8**.
Plant health
Gamescleuch has been served with a Statutory Plant Health Notice (SPHN) with four positive cases of *Phytophthora ramorum* identified. The pathogen (an algae-like organism or water mould) is [in the UK] primarily associated with commercial larch trees although other tree species are susceptible. No other plant related pests and disease have been recorded at Gamescleuch.
Infrastructure
Gamescleuch is serviced by a good network of forest roads which gain access to most management coupes. Upgrades and maintenance is facilitated primarily by the Gamescleuch Hill quarry (NT 2897 1453). The main forest entrance is accessed via a timber slab/beam bridge that crosses over the Tima Water at NT 2799 1312. An underground powerline services the BT 4G telecoms mast which was erected in 2019. These features can be seen on **Map 2.**

Appendix II: EIA screening opinion request form

Overleaf if required

Appendix III: Consultation record

Consultee	Date contacted	Date of response	Issues raised	FLS response
Historic Environment Scotland	07.06.21	09.06.21	No issues raised	-
Flood Management – Scottish Borders Council	07.06.21	09.06.21	No major objections at this stage. Queried if the blanket bog soils are being considered for restoration as mentions this could have a positive impact on downstream flooding.	The soils have been identified as scenario C soils but will have a full assessment made via the FLS Peatland Forester. Details of this are within this LMP within section 4.0 Management Proposals – Soils – Deep Peats.
SEPA	07.06.21	14.06.21	Unable to provide detailed response due to previous cyber-attack. Listed minimum requirements concerning operations around environmental features. Opportunity to potentially enhance environment with restoration of bogs, flushes, GWDTE and native planting	All activities will be in accordance with the UKFS, and will meet all regulatory requirements as well as meeting our UKWAS commitments.
The Tweed Foundation	07.06.21	21.06.21	No major issues raised. Request that all operations consider Forest and Water Guidelines	Forest and Water guidelines will be followed and maintained both with the planning for the works and all ongoing active operations.
Archaeology officer –	07.06.21	28.06.21	No issues raised	Existing features will be buffered as appropriate.

Consultee	Date contacted	Date of response	Issues raised	FLS response
Scottish Borders Council			If any archaeological features are found these should be reported via the Treasure Trove Unit.	Any discovered features will be appropriately recorded, monitored and buffered as required.
Nature.Scot	07.06.21	01.07.21	Restructuring around White Sike and Gatecleuch Sike with a substantial native broadleaf buffer would benefit the Tima SAC watercourse. General increase in broadleaf would benefit the valley in a wider context. Red squirrel have been recorded within the northern and western ends of the LMP area.	Restocking will include an expansion of broadleaf and open ground throughout the main water courses. Expansion of broadleaf will also be introduced as a transitional buffer from the lower slopes especially focused around the Ettrick marshes. A diverse variety of small seeded species favoured by red squirrel are proposed along with smaller clear fell management coupes to allow movement throughout the site.
EYCDC	07.06.21	16.07.21 (Site meeting)	Generally agreeable with draft plans (as of 16.07.21), noted the scale of far northern coupe is being quite large – FLS to look at reducing this phase 1 coupe and increasing neighbouring phase 2 coupe. EYCDC requested open and/or broadleaf buffers along sections adjacent to the marshes trails.	Coupe scale have been adjusted accordingly from the previous plan. Broadleaf and native conifer alongwith open areas are incorporated into the restock of all areas adjacent to EYCDC land and trails. Ongoing communications to be held when felling is commencing, ATV track will be reinstated. Gamescleuch Linn trail is still decommissioned due to health and safety issues and maintenance requirements. A alternative trail

Consultee	Date contacted	Date of response	Issues raised	FLS response
			EYCDC commented on steepness of track coming off the far northern road network. EYCDC mentioned potential access restrictions along the upper sections of the ROW track leading up through the southern area of Gamescleuch Hill. EYCDC requested the northern Annelshope ATV track be reinstated to meet future proposals of a trail outside of FLS land. EYCDC requested to reinstate the Gamescleuch Linn trail. Suggestion of broadleaf expansion along the Gamescleuch Linn. Harvesting options discussed in regards to the conifer on the EYCDC land. Draft felling design gives both a phase 1 and a phase 2 window for operations on the EYCDC side.	was in place from the forest road however, this has been extensively damaged following the Storm Arwen event. This will be reinstated once this area has been cleared; programmed in this LMP for phase 1. Enrichment planting is proposed within coupe 69022 which runs along the mid-section of the Linn.
Local resident	10.06.21	16.07.21	Clarification if deer fences are going to be used.	No deer fences are proposed within the lifespan of this LMP.

Consultee	Date contacted	Date of response	Issues raised	FLS response
			ROW running from Deephope to West Buccleuch is reinstated – followed up with site meeting	ROW areas where vegetation is obstructing the path will be cleared. Small windblown tree to be cleared. Egress point at top of the hill to be re-instated. All works completed 03.09.21
Local resident	10.06.21	23.07.21 (Site meeting and email)	Request for conifer adjacent to Gamescleuch Farm is retained under LTR Leave SS around SPHN areas Leave a buffer of SS next to paths Doesn't want to see visual impact of Clear Fell activities. Concern for wildlife impact.	Coupe 69009 remains as long term retention with a proposed fell date of 2051/52. 69010 was previously under similar management however, with the damaged caused by Storm Arwen this now requires felling. SS will be removed within and around the SPHN areas to accommodate more practical wind firm management coupes A strip of mature SS retained along the trails would be too unstable to be left. These are proposed to be removed but restocked with broadleaf, native pine and open space. Smaller clear fell coupes have been designed into the plan to alleviate visual impact. Environment checks will be carried out before each felling activity is operational as per our work plan procedure and will be mitigated against accordingly. Follow up phone calls with the Planning Manager has alleviated most of these concerns.

Consultee	Date contacted	Date of response	Issues raised	FLS response
Access Ranger- Scottish Borders Council	07.06.21	30.07.21	BE123 Right of Way highlighted. The ROW should be kept open and free from obstruction. Line on the ground may vary from the original which is acceptable An appropriate egress point will be required at the top of Gamescleuch Hill	The RoW is currently open and free of obstruction. The currently establishing restock has open space around the RoW. The line for the best part of the trail is as per the records held by SBC although an alternative is also clear at the top section near Gamescleuch Hill. Egress point has been opened up.
Local resident	02.09.21	02.09.21	Requesting felling plan 01.10.21 Site meeting Queried when felling may take place adjacent to property and land Not wanting impact of felling alongside boundary Leave area of Larch felling open Concerns on impact of visual impact and squirrel habitat Develop tracks for horses – forest roads difficult for horses post harvesting (even when reinstated)	Proposals not finalised at time of email, suggested a site meeting to discuss concerns. Will inform once SF puts plan on public register. The main coupe of concern was 69025 this has been retained as long term retention with a fell date of 2054/55 monitoring of this coupe will be required to assess prolonged stability. With 69025 being left as long term retention this will give a sufficient screen from the clearfelling of coupe 69010. The larch area will be restocked with alternative conifer to give further diversity to Gamescleuch.

Consultee	Date contacted	Date of response	Issues raised	FLS response
				No plans for further tracks to be instated at Gamescleuch.
Ettrick and Yarrow Community Council	07.06.21	02.09.21	Request ROW be maintained open and free of obstruction. Signage requested along ROW	ROW is free of any obstruction. Emailed in relation to a possible partnership in terms of signage erection and maintenance along with Scottish Borders Council. Awaiting reply.
Conservation Officer South East Saving Scotlands Red Squirrels	07.06.2021	14.12.2021	Site is outwith PARCs area although close to Craik which is a known red squirrel stronghold. Minimise impact of forestry work whilst acknowledging felling and restocking cycles. Records show squirrel activity within this area for the last 5 years. Surveys to be carried out in advance of felling Improvement on future habitat – providing continuous cover, LTR, small coupe felling and maintaining connectivity. Species assemblages also to	Environment checks will be carried out before each felling activity is operational as per our work plan procedure and will be mitigated against accordingly. A diverse variety of small seeded species favoured by red squirrel are proposed along with smaller clear fell management coupes to allow movement throughout the site.

Consultee	Date contacted	Date of response	Issues raised	FLS response
			be considered to allow for a continuous food supply.	

Appendix IV: Tolerance table

	Maps Required (Y/N)	Adjustment to felling period *	Adjustment to felling coupe boundaries **	Timing of Restocking	Changes to Restocking species	Changes to road lines	Designed open ground ** ***	Windblow Clearance ****
FC Approval normally not required	N	• Fell date can be moved within 5 year period where separation or other constraints are met.	• Up to 10% of coupe area.	• Up to 3 planting seasons after felling.	• Change within species group e.g. evergreen conifers or broadleaves.		• Increase by up to 5% of coupe area	
Approval by exchange of letters and map	Y	• Advance felling of Phase 2 coupe into Phase 1	• Up to 15% of coupe area	• Between 3 and 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised.		• Additional felling of trees not agreed in plan. • Departures of > 60m in either direction from centre line of road	• Increase by up to 10% of coupe area • Any reduction in open space of coupe area by planting.	• Up to 5ha
Approval by formal plan amendment may be required	Y	• Felling delayed into second or later 5 year period. • Advance felling (phase 3 or beyond) into current or 2nd 5 year period.	• More than 15% of coupe area.	• More than 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised.	• Change from specified native species. • Change Between species group.	• As above, depending on sensitivity.	• In excess of 10% of coupe area. • Colonisation of open space agreed as critical.	• More than 5ha.

NOTES:

* Felling sequence must not compromise UKFS, in particular felling coupe adjacency

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

*** *Tolerance subject to an overriding maximum 20% open space*

**** *Where windblow occurs FCS should be informed of extent prior to clearance and consulted on where clearance of any standing trees is required*

Table of Working Tolerances Specific to Larch

	Adjustment to felling period	Adjustment to felling coupe boundaries	Timing of restocking	Changes to species	Changes to road lines
FC Approval not normally required	Fell date for all larch can be moved and also directly associated other species	Larch areas can be treated as approved coupes. Other conifers directly associated with larch being felled, may also be removed up to an equivalent of 20% of the area occupied by the larch or 5 ha, whichever is greater	To be undertaken within the overall plan approval period.	Replacement as per the agreed restock plan, but where this is not specified or is larch this may be replaced with either another diverse conifer (not SS) or Broadleaves.	
Approval normally by exchange of letters and map. **In some circumstances Approval by formal plan amendment may be required**		Removal of areas of other species in excess of the limits identified above.	Restocking proposals outwith the plan approval period.	Restocking proposals for other species which do not meet the tolerances identified above.	New road lines or tracks directly necessary to allow the extraction of larch material.

Appendix V: Historic Environment records

Refer to **Map 12**

Historic Environment Records						
Designation	**HES Ref**	**Name**	**Feature Description**	**Grid Reference**	**Importance**	**Area (ha)**
Undesignated	Canmore #341610	Old Road	A length of an old road or track, marked on the 1st Edition OS map.	NT 279139	Local importance	0.15 ha
Undesignated	Canmore #354377	Sheep fold	Post medieval sheepfold on shared boundary	NT 29903 15054	Local importance	0.02 ha