



Forestry and
Land Scotland
Coilltearachd agus
Fearann Alba

Gledenholm

Land Management Plan

2024 - 2034

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.



The mark of
responsible forestry



Applicant's details	
Applicant:	Forestry and Land Scotland
Address:	55-57 Moffat Road, Dumfries, DG1 1NP
Agent's name:	Melissa Viguiier
Agent's position:	Forest Planner
Agent's contact number:	07340455731
Agent's email:	Melissa.viguiier@forestryandland.gov.scot

I hereby apply for a permission to fell the trees described in this application and I certify that:

I have notified all stakeholders that may be affected by the felling in this application and sought their views prior to submitting this application;

I am authorised to sign legal contracts on behalf of Forestry and Land Scotland;

Any necessary consents from any other person(s) if required, have been obtained;

I have made the necessary checks with the local planning authorities regarding Tree Preservation Orders and Conservation Areas;

I hereby acknowledge that Scottish Ministers may process any of my personal data contained in or relating to this application in accordance with the terms of Scottish Forestry's Privacy Notice, a copy of which is available at www.forestry.gov.scot;

Where applicable and appropriate I have submitted an EIA screening opinion form for operations contained within this application under the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017.

I have read and understand this application fully and, to the best of my knowledge and belief, the information given in this application is complete, true, and accurate;

I accept that any false or misleading information provided in this application constitutes an offence and may result in any felling permission based on this application being revoked at any time;

I have read and understand Scottish Forestry's Privacy Notice, a copy of which is available at <https://forestry.gov.scot/privacy-complaints-freedom-of-information-and-requests-for-information>.

Signed, Pp Regional Manager		Signed, Pp Conservator	
FLS Region	South	SF Conservancy	
Date	05 August 2024	Date of Approval	
		Date Approval Ends	
		Plan Ref. No.	

A. Description of Woodlands

A.1 Property Details

Property (LMP) Name:	Gledenholm
Grid Reference (main entrance):	NX 9878 8809
Nearest town or locality:	Ae
Local Authority:	Dumfries and Galloway

A.2 Location and Background

See Map 1.

Gledenholm Forest is a 147Ha predominantly conifer plantation forest, situated approximately 900m south of Ae Village near Dumfries, and 720m south of the Forest of Ae. This is a compact forest on an area of raised ground. There is one road through the forest, and there are views across the surrounding farmland to the Forest of Ae (north) and Black Loch SSSI to the east. The forest was planted in the 1970s and was previously an area of moorland.

A.3 Existing Schemes and Permissions

Type: Forest Design Plan

Ref. No: FDP205

Details: Approved 17/04/2014 and expired 17/04/2024

Type: Felling Permission

Ref. No: 205

Details: Date Signed 01/04/2019 expired 14/04/2024

Type: Felling Permission

Ref No: 11473

Details: Date signed 10/04/24 expires 09/04/26

Type: SPHN

Ref No: STH19_0088, 0143, 0144, 0407

Details: 26.33Ha Larch.

Deadline: 28/02/2021

Type: SPHN

Ref No: STH19_0410

Details: 3.98Ha Larch

Deadline: 28/02/2021

Type: SPHN
Ref No: STH18_1385
Details: 12.17Ha Larch
Deadline: 28/02/2019

Type: SPHN
Ref No: STH18 0378 0380
Details: 24.21Ha
Deadline: 28/02/2019

A.4 Stakeholder Engagement

Summary of the main points raised by stakeholders during Scoping (and where they are addressed in the plan). The full consultation record can be found in Appendix I.

1. Conifers self-seeding on the adjacent Black Loch SSSI. (Section C.2.11)
2. Severely restricted access route for timber haulage. (Section C.2.8)
3. Schedule 1 bird species. (Section C.2.11)
4. Long Established woodlands of Plantation Origin (LEPO) on site should be incorporated into low impact silviculture. (Section C.2.11)
5. There are Scottish water assets in the area that could be impacted by forestry operations. (Section C.2.15)
6. Two newly approved Woodland Creation Sites within 500m, one of these creates a continuous connection between Gledenholm and the Forest of Ae. (Appendix 1)

A.5 Long Term Vision and Management Objectives

A.5.1 Vision

Gledenholm will continue to produce quality timber from a range of conifers in a sustainably managed forest. The forest will be subdivided by a broadleaf biodiversity network, this interconnected network will provide a wide range of benefits: It will help to protect the riparian zones and the neighbouring Black Loch SSSI, it will encompass an area of LEPO, open areas within the broadleaves will help protect the unscheduled heritage impact zones.

The broadleaf network divides the site into three conifer growing zones, and a section of this will be kept as Long-Term Retention (LTR) for the benefit of raptors.

A.5.2 Management Objectives

Objective 1:

Manage the woodland under appropriate silvicultural systems to produce sustainable quality timber products from a range of site suitable conifer species.

Indicator of objective being met: Diversity of age structure to ensure a sustainable supply of timber is a priority. Increase the conifer diversity to five species. Apply a first thinning where possible.

Objective 2:

Expand and connect the area of Broadleaf in the woodland, with a perimeter planting, and cross site corridors linking to the existing LEPO area.

Indicator of objective being met: Field survey and drone survey to assess that broadleaves are established in coupes 40003, 40009, 40011,40012, 40019, 40892. Repeat survey in years 1, 5, 10.

Objective 3:

Manage the woodland to help mitigate Climate Change. Employing best practice to focus on carbon sequestration (tree growth) and supporting the natural forest ecosystem to become resilient.

Indicator of objective being met: 5-year survey of riparian broadleaf corridors, deadwood piles will be placed where there is the highest ecological potential. Increase resilience to wind and winter storms (through structural diversity and species diversity).

A.6 General Site Description

A.6.1 Topography and Landscape

Gledenholm is a slightly elevated and compact forest block, with elevation ranging from 127m AOD at the forest entrance, to the highest point of 197m in the northwest of the site. There are no landscape designations within the site, or in the local area. There are four small watercourses running through Gledenholm, all of them are situated close to the perimeter. See Location Map 1.

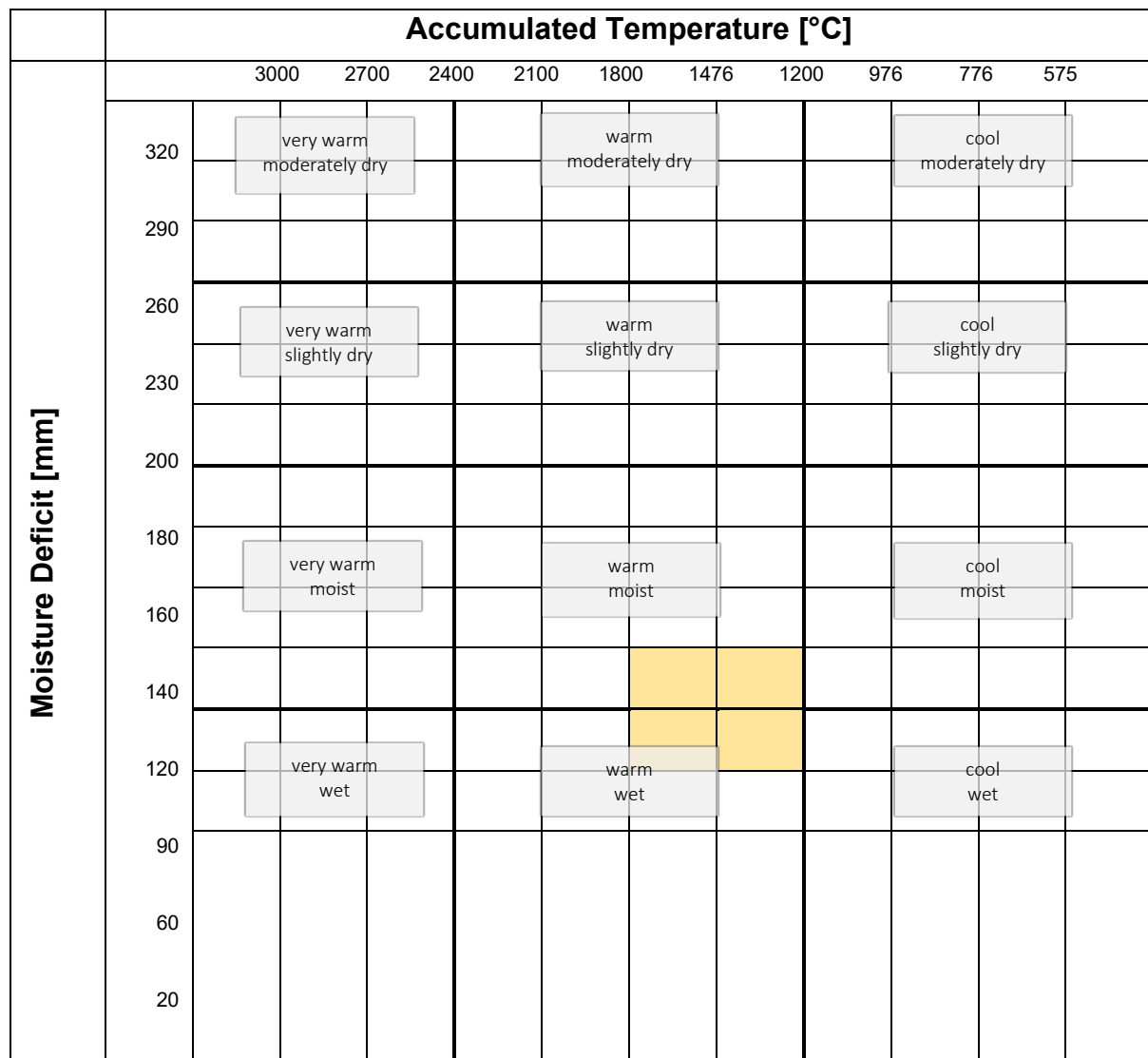
Gledenholm spans two Landscape Character Types (LCTs), the eastern half of the site is in Upland Fringe – Dumfries & Galloway (LCT172) and the western half of the site is in the Foothills with Forest area – Dumfries & Galloway (LCT 176). Conifer Forestry is a feature of both LCT's as part of a mosaic landscape.

A.6.2 Geology and Soils (see map 8)

There is a mosaic of five soil types at Gledenholm. Upland brown earth (37% of site), Iron pan peaty 3%, Surface water gley 24%, Tussocky Molinia bog 9%, Peaty surface water gley 27%). In the northwest corner of the site is approximately 8ha of flushed peat (9b/6lp/61) but peatland restoration is not appropriate.

A.6.3 Climate

The current climate at Gledenholm is described as ‘warm-moderately exposed-moist’. Climate conditions are similar across the site, except for the western side of Gledenholm which is adjacent to moorland and more exposed to the prevailing south westerly wind. The climate is projected to change slightly to a ‘Warm wet’ weather pattern.



In Southwest Scotland the accumulated temperature is expected to rise becoming warmer, moisture deficit is likely to fall, causing drier summers, wetter winters resulting in more waterlogged soils. This may reduce productive tree growth in some species through the rise in anaerobic conditions in some areas and increase areas of crop susceptible to windblow.

A.6.4 Hydrology (see map 3)

Gledenholm spans two water catchments: the River Annan and Lochar Water. The water quality in these water catchments is described as poor in the River Annan and moderate in the Lochar Water.

There are four small watercourses within Gledenholm, three of them are unnamed, and the fourth in the southwest of the site is called Park Burn. The two watercourses in the north of the site flow northeast into the Goukstane Burn, which flows into the Water of Ae, and this in turn flows into the River Annan. The watercourse in the southeast of the site flows east into Black Loch SSSI, which also flows into the Water of Ae. Park Burn watercourse flows south into Lochar water.

Water Quality:

Bodies of surface waters (as identified by SEPA's Water Hub) in the plan area:

Name: Park Burn (ID:10637)

Overall Condition: Moderate

Name: Goukstane Burn (ID:10664)

Overall Condition: Poor

Flooding:

The forest is within two catchments where there are potentially vulnerable areas at risk of flooding downstream:

- Lochar
- Annan (this also includes Heck and Greenhill)

FLS follows UKFS guidance to help slow the flow of water including riparian buffers and disconnected drains. Felling will be phased across the forest and given the catchments are large with limited forestry cover, the proposed felling will not have a measurable impact on peak flow at the flood point.

Water supplies:

See Private Water Supply (PWS) Appendix.

A.6.5 Windthrow

Windthrow risk is moderate with DAMS scores between 13-16. Risk is greatest on the high ground reducing with altitude. Extensive windblow (27 ha) has occurred in the north due to Storm Arwen. The windthrow risk has informed the felling ages.

A.6.6 Adjacent Land Use

Gledenholm is bordered by improved grazing land to the north as well as a T shape area of LEPO, that is partially within Gledenholm, and continues onto the neighbouring Old Gledenholm. To the west there is rough grazing on acid grassland and south and east is moorland and rough grazing. To the east is the Black Loch SSSI (NatureScot site code 212) which is designated because it is the best example within Nithsdale District of a basin fen.

A.6.7 Access

The site is visited by occasional dog walkers and horse riders, who park at the forest entrance off the C4N minor public road.

A.6.8 Historic Environment (see map 9)

There are three Unscheduled Heritage features on site which are all described on Canmore under the names Gledenholm Moor and Gledenholm. Two of these are prehistoric Cairnfields (canmore ID 65757), one is currently afforested, the second is in an area of open ground (which will be retained). The third site is near the entrance and is the remains of a palisaded settlement and field system (canmore ID 65777), the palisaded settlement is in open ground.

A.6.9 Biodiversity

There are two areas of LEPO (measuring 3.74ha and 0.7ha) within Gledenholm, that are connected to a further 4.57ha and 1.16ha of LEPO that extends out across a neighboring property up to the minor public road C4N. This creates a link between the LEPO and the neighboring roadside hedgerow and scrub and ditch network. The LEPO area dates to the first edition OS maps from 1861.

Within Gledenholm there is also a long history of raptors nesting on the mature Sitka spruce stands. A 3 Hectare area of mature Sitka spruce has been reserved as long-term retention for raptors, this is adjacent to the area of LEPO.

There are red squirrels living within Gledenholm forest block, however this forest is not within a Red Squirrel Stronghold Area.

A.6.10 Invasive Species

There are no FLS records of invasive species within Gledenholm.

A.7 Woodland Description

Map 2 shows the current tree species composition and pattern.

Gledenholm was planted in the late 1960s with predominantly Sitka spruce. In the LEPO area native broadleaf trees was retained, but surrounded by conifer plantation on three side, the fourth side is grazing land. The first rotation crop has been almost entirely felled, with just 3 ha remaining as LTR, next to the LEPO. The current crop is mostly Sitka spruce, with some age diversity. Broadleaves have established well on the site on the eastern edge, and patchily along the road network and along some of the riparian areas.

Table 1: Area by species

Plan area by species						
Species	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
Sitka spruce	83	56	77	52	68	46
Other conifers	1	1	32	22	37	25
Native broadleaves	8	5	12	8	14	10
Open ground	14	10	16	11	16	11
Fallow	41	28	10	7	12	8
Total	147	100	147	100	147	100

Chart 1: Area by species

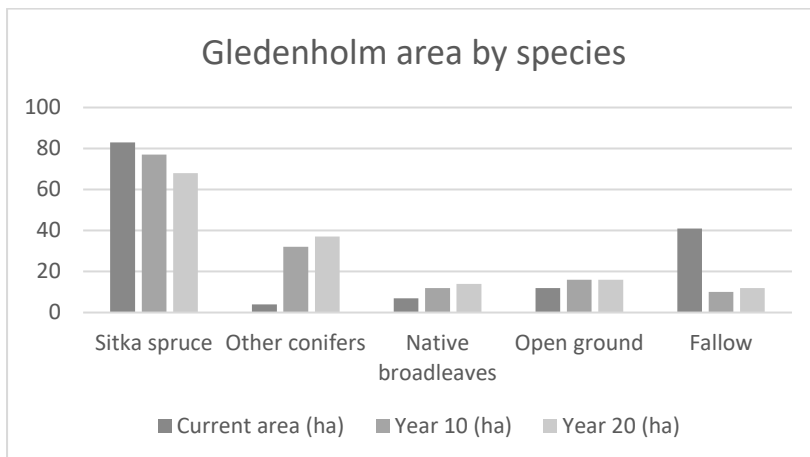
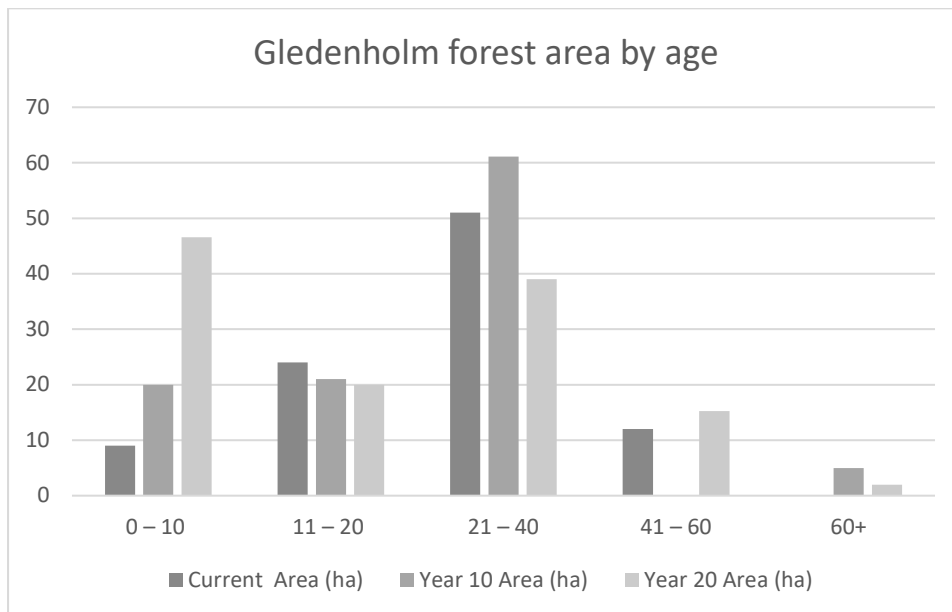


Table 2: Area by age

Plan area by Age						
Age Class (years)	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
0 – 10	9	3	20	14	47	32
11 – 20	27	19	21	14	20	14
21 – 40	51	36	61	42	39	27
41 – 60	5	4	0	0	15	10
60+	0	0	5	3	2	1
Open ground (including fallow)	55	38	40	27	24	16
Total	147	100	147	100	147	100

Chart 2: Area by age



A.8 Plant Health

In the last 10 years there have been four SPHNs issued for Gledenholm, two in in 2019 and two in 2021. There is no larch remaining in Gledenholm now. The Spruce bark beetle (*Dendroctonus micans*) has been detected in Gledenholm, and the biological control beetle *Rhizophagus grandis* released on site to control it.

B. Analysis of Information

B.1 Constraints and Opportunities – and Concept

Constraints and Opportunities		
Factor	Constraints	Opportunities
Timber production	<ul style="list-style-type: none"> • Just over half of the site has poorer soils for tree growth (54% of site has surface water gleys, and peaty gleys) which are prone to waterlogging & risk of compaction. • Large parts of the current crop haven't been thinned. • Severely restricted access route for timber haulage. • There is currently little diversity of conifer species, which is a risk in terms of pests and diseases. 	<ul style="list-style-type: none"> • DAMS score 13-16, moderate. • First thinning is possible in six coupes or part coupes. • SS regenerating well in places, which is generally a more resilient all round crop. • Range of soils on site, 46% of site is good for tree growth (brown earth, flushed deep peat).
Water	<ul style="list-style-type: none"> • Four small watercourses • One PWS. • Black Loch SSSI (Basin fen) adjacent to east boundary and connected by a watercourse. • Poor water quality in the River Annan catchment to the north of Gledenholm. 	<ul style="list-style-type: none"> • The watercourses are all on the perimeter edges of the site, these will be protected from forestry operations and instead integrated into the broadleaf biodiversity network, which is a minimum intervention zone.
Historic Environment	<ul style="list-style-type: none"> • Three Heritage impact zones within the site, they are all unscheduled prehistoric heritage. 	<ul style="list-style-type: none"> • Although there is little upstanding archaeology left, two are maintained as open areas, which also protects the underground archaeology.

Constraints and Opportunities		
Factor	Constraints	Opportunities
Biodiversity	<ul style="list-style-type: none"> • LEPO area connects the forest with the neighbouring farm and roadside hedgerow network. Long standing LEPO, dating back to the first edition OS map of 1861. • Conifer seed is windblown into the adjacent SSSI, contributing to the degradation of the SSSI. 	<ul style="list-style-type: none"> • A 3ha area of Sitka spruce has been retained as LTR for raptors, which have a long history of nesting in the forest and provides some structural diversity. The LTR is adjacent to the LEPO which provides additional foraging habitat. • There are mature broadleaf trees in the LEPO area, which will be an integrated into the broadleaf biodiversity network. • Red Squirrels onsite, they will benefit from a mix of conifers and broadleaves. • Gledenholm has always been an isolated forest block, but in 2024 it will become connected to the Forest of Ae by the creation of a new woodland creation scheme along the Goukstane Burn. This is an opportunity to increase broadleaf connectivity. • Broadleaf riparian zones will benefit fish and aquatic life.
Landscape		<ul style="list-style-type: none"> • Broadleaf minimum intervention perimeter planting will have landscape and visual benefits.
Climate	<ul style="list-style-type: none"> • Future climate may result in warmer drier summers, wetter winters and extreme weather events. This will impact species which are drought prone, or shallow rooted. 	<ul style="list-style-type: none"> • All the larch has been removed through SPHNs providing opportunities to continue species diversification. • ESC modelling suggests local climate will change from cold

Constraints and Opportunities		
Factor	Constraints	Opportunities
Climate (cont.)	<ul style="list-style-type: none"> Climate change may increase the severity of pests and diseases. 	<p>wet classification to warm and moist by 2080, providing opportunities for alternative species.</p> <ul style="list-style-type: none"> Routine tree health surveys should help identify pests and diseases early.
Roads and Haulage	<ul style="list-style-type: none"> The only public road access to Gledenholm is via the C4N, this minor road is described as 'Severely restricted for timber haulage'. 	<ul style="list-style-type: none"> No additional roads are required. Good access for thinning operations to access the site.
Plant Health	<ul style="list-style-type: none"> <i>D.micans</i> present on site, biological control <i>R.grandis</i> has been released to control it. Larch can no longer be grown on site due to <i>P.ramorum</i> infections, and current national policy. 	<ul style="list-style-type: none"> Opportunity to diversify species in previous larch areas.
Utilities	<ul style="list-style-type: none"> There is one PWS within the LMP area. The PWS source is in the LEPO area, and the water pipeline route is through Sitka spruce (planted 2006). 	<ul style="list-style-type: none"> The PWS location means it will be protected by the broadleaf network.

Concept

Timber production will continue to be a key objective for Gledenholm. Nearly half the site has rich soil providing good growing conditions for a variety of conifer species. The poorer soils with poorer drainage are suited to a narrower range of conifer species. Diversifying conifer species across the site, will provide resilience to future fluctuations in climate and pests. Management practices such as thinning and prioritising regeneration, will promote healthy trees which in turn will be more resilience.

Heritage impact zones will be protected using open spaces. These open spaces will integrate into the broadleaf biodiversity network, which will connect the existing LEPO area with the rest of the site, and the long-term retention area. This broadleaf biodiversity network will provide multiple benefits: biodiversity, watercourse quality improvements,

deadwood ecological potential, carbon storage, wind break for restock sites, reducing conifer seed blowing into the neighboring SSSI.

Climate change is expected to bring an increase in extreme weather events such as storms, drier summers, wetter winters, an increase in insect pests, and diseases. Several techniques will be used to increase the resilience of the forest to climate change including diversified species selection, diversifying age structure, increase thinning and regular plant health surveying.

Map 3 illustrates how the plan concept incorporates the important constraints and opportunities into the management objectives.

C. Management Proposals

C.1 Silvicultural Practice

C.2 Prescriptions

C.2.1 Felling

Sites proposed for clear felling in the plan period are identified as Phase 1 management coupes on Map 4. Refer to Table 3 for scale of felling.

Stands adjoining felled areas will be retained until the restocking of the first coupe has reached a minimum height of 2m. No adjacency issues have been identified in this plan.

For any future clearfell coupes where adjacency is not possible, and there is no exemption under the Scottish Forestry Act, an amendment will be discussed and agreed with Scottish Forestry before the coupe is felled.

Any other planned tree felling (e.g. selective felling, felling of individual trees, or felling of coppice) is shown on Map 5. In coupe 40012, any Sitka spruce or other conifer regen that is larger than 10cm dbh will be removed to reduce the number of seed producing conifers distributing seeds on the adjacent SSSI.

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 (dbh) (1.3 m); pose immediate danger to persons or property; are completely dead; or are part of Authorised Planning Permission works or wayleave agreements].

C.2.2 Thinning

Potential sites for thinning in the plan period are identified on Map 5. Table 4 indicates the potential area.

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.

C.2.3 Low Impact Silvicultural Systems (LISS)

Areas identified for LISS management are shown on Map 4.

Six coupes in Gledenholm are potential locations for CCF: 40009, 40016, 40017, 40024, 40025 and selective thinning in 40012. All are single species coupes less than 20 years old.

Coupe 40017, situated on the western edge of the forest, was planted in 2013 and 2018, it is adjacent to open ground facing the prevailing wind creating a string wind firm edge. The 2013 sub-cpt would suit a strip shelterwood management system which should begin with an early thinning in this plan period.

Parts of coupes 40009, 40024 and 40025 on the northern edge of the forest, also planted in 2013, should be in the thinning programme.

Coupes 40016 and part of 40024 are also candidates for thinning but were planted in 2006, so are late for the first thinning.

C.2.4 Long Term Retentions (LTR) / Natural Reserves

Stands identified as LTR are shown on Map 4. There are no Natural Reserves in the plan area.

3.17ha of LTR (coupe 40020) provides nesting habitat for raptors and adds structural diversity. The LTR area covers 2% of the forest. This coupe now has exposed edges on the west and north, due to widespread Storm Arwen damage.

C.2.5 Restocking Proposals / Natural Regeneration

Planned restocking of felled areas, and proposals for the future habitats and tree species over the whole plan area are shown on Map 6. See Table 5 for areas, establishment, and mix proportions. Timing of restocking will comply with the plan tolerance table shown in section C.4.

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.

Stocking densities will be at least 2500 stems per ha for conifers and 1600 sph for broadleaves unless justified elsewhere in this plan. If the restock or natural regeneration should fail to reach these levels 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.

There will be a preference for natural regeneration of native woodland areas. Any non-productive broadleaf planting will be native to the area and will complement 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.

Table 3: Felling gross figures

Scale of Proposed Felling Areas										
Total Plan Area			147 ha							
Felling	Phase 1	%	Phase 2	%	Phase 3	%	Phase 4	%	LTR	%
Area (ha)	2.05	1.4	0	0	8.98	6.1	0	0	3.17	2.2

Table 4: Thinning

Thinning over the first 10 years of the plan	
Total area where thinning may be undertaken during the plan period	74.55 ha

Table 5: Restocking

Felling Phase	Map Identifier (coupe number)	Species to be planted - or established through natural regeneration (nr)	Area (ha)*
1	40010	Pacific silver fir (RF) 50% / Noble fir (NF) 50% Mixed broadleaves (MB) 100%	16.42 6.79
1	40021	Norway spruce (NS) 100%	7.45
1	40025	Pacific silver fir (RF) 50% / Norway Spruce (NS) 50% Mixed broadleaves (MB) 100%	7.32 0.36
1	400892	Mixed broadleaves (MB) 100%	1.38
Total Restocking Area (ha)			33.31

*net area to be planted excluding designed open ground

C.2.6 Protection

Management of deer is an underpinning activity essential for the delivery of benefits from Scotland’s National Forest Estate. The aim is to manage healthy wild deer populations manage deer impacts across the Estate consistent with the carrying capacity of the land and successful delivery of FLS land management objectives. Deer Management plans direct the priorities for management and are available on request.

Deer numbers are low at present so protection is not required. Browsing damage will be monitored and tree protection will be implemented if required.

C.2.8 Road Operations

Map 7 shows the existing forest road network and any associated quarries, timber haulage egress points, and any local 'Agreed Timber Transport Routes'. There are no planned roads for this forest block.

C.2.9 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 must manage their land and water responsibly in relation to access rights, and FLS will only restrict public access where it is necessary and will keep disruption to a minimum.

C.2.10 Historic Environment

The Regional Historic Asset Management Plan includes conservation management intentions for designated historic assets on Scotland's National Forests and Land. Details of all known historic environment features are held in FLS's Heritage Dataset 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 will be checked both on FLS's records and the Council's HER prior to the commencement of forestry activities. Any upstanding features will be clearly marked, both on the ground and on operational maps. Care will be taken to avoid any damage to surviving structural elements.

Map 9 and Appendix II provide more information about the historic environment features within and adjacent to the plan area.

C.2.11 Biodiversity

UK Forestry Standard guidance is to manage a minimum of 15% of the forest management unit with conservation and the enhancement of biodiversity as a major objective. The figure for this plan is 19%.

There is 3.17ha of LTR retained to provide habitat for Schedule 1 birds adjacent to the LEPO area that provides further foraging habitat for birds and other wildlife. There are red squirrels in Gledenholm.

To the east of Gledenholm is the Black Loch SSSI, the best-preserved example of a basin fen within Nithsdale, and is fed by two watercourses that originate in Gledenholm. The long-term objective is to remove Sitka spruce in the plan area within 100m of the SSSI boundary and to establish a broadleaf buffer, thus reducing the risk of non-native conifer regeneration on the SSSI.

C.2.12 Tree Health

Routine tree health inspections by our inhouse experts will form part of the management of this site, and any tree health issues will be reported to Forest Research.

C.2.13 Invasive Species

There are no Invasive species recorded within the plan area.

C.2.14 New Planting

Not applicable

C.2.15 Other

Wildfire

FLS continues to work closely with 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.

Soils

Brash mats (or alternative measures) will be used to protect sensitive soils. 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. Felling residue will usually be left on site to allow nutrient recycling, with consideration for the practicalities of restocking. 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.

Utilities, Renewables and other developments

Within Gledenholm there is one PWS and associated pipeline (see Appendix V). Scottish Water have confirmed that there are water assets in the local area (see Appendix 1).

C.3 Environmental Impact Assessment (EIA) and Permitted Development Notifications

Not applicable

C.4 Tolerance Table

See Appendix III.

Appendices

Map 1 – Location

Map 2 – Current tree species

Map 3 – Concept

Map 4 – Management (Felling)

Map 5 – Thinning

Map 6 – Future habitats and species (Restock)

Map 7 – Timber haulage

Map 8 – Soils

Map 9 – Historic environment

Map 10 – DAMS

Map 11 – Private Water Supply CONFIDENTIAL

Map 11b – Private Water Supply catchment CONFIDENTIAL

Appendix I – Consultation record

Appendix II – Historic environment records

Appendix II – Tolerance table

Appendix IV – Private Water Supplies CONFIDENTIAL

Appendix I: Consultation record

See section A.4 for a summary of the main points raised below by stakeholders and where they are addressed in the plan.

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
Appreciate the sensitivity of the watercourses has been acknowledged, and the proposed deciduous tree planting will have many environmental benefits and help the River Annan catchment become more resilient to climate change impacts.	Galloway Fisheries Trust	Support of our riparian broadleaf zones which will have many environmental benefits in the future including helping the Annan Catchment become more resilient to climate change.
Self-seeding Sitka spruce is one of the factors degrading the adjacent Black Loch SSSI	NatureScot	<p>“One of the negative pressures on the Black Loch SSSI is self-seeded Sitka. This is almost certainly from the Gledenholm plantation as there is currently no forestry in the vicinity.”</p> <p>A 100m buffer zone from the edge of the SSSI, this should be maintained as open ground which will require ongoing maintenance. Having broadleaves present at the nearest edge will help “intercept seed rain to some degree.”</p>
Severely restricted access route for timber haulage.	Scottish Forestry, South Scotland Conservancy	<p>Concern that this may cause issues in the future.</p> <p>Recent harvesting in the forest has used this route without issue, it is not expected to present a problem in the future.</p>
Degrading nature of the adjacent SSSI.	Scottish Forestry, South Scotland Conservancy	<p>Concern that the conifer seed rain from Gledenholm is contributing to the degradation of the SSSI.</p> <p>Broadleaves to replace conifers in future restocking along the eastern edge to intercept seed rain.</p>

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
There are two newly approved New Woodland Creation sites within 500m of Gledenholm. One of these creates a continuous connection between Gledenholm & the Forest of Ae.	Scottish Forestry, South Scotland Conservancy	Concern that this may cause issues in the future e.g. deer dynamics.
There are Scottish Water Assets in the area	Protected drinking water sources, Scottish Water	There are no Scottish water drinking water catchments or water abstraction sources, which are designated as drinking water protected areas under the water framework directive, in the area that may be affected by the proposed activity. However, there are Scottish Water assets in the area. All Scottish water assets potentially affected by the activity should be identified with consideration being given to access roads and pipe crossings.
Breeding Schedule 1 birds and ravens at Gledenholm	Galloway Raptor study group	Long term retention is desirable to preserve breeding sites where possible.
	Ae Community Council	The Ae Community Council shared the Gledenholm external consultation information with the properties that are closest to the site and didn't receive any feedback.
	Online questionnaire on the FLS webpage	The increase in broadleaf planting is good, would it be possible to create a looped footpath in the design?

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
	Dumfries & Galloway Council Archaeologist, Andrew Nicholson	<p>The archaeology in Gledenholm should be ground checked because it is more than likely that it was destroyed by forestry ploughing and planting in the 1960s and 1970s. If they are no longer extant then it would be helpful to know as this would reduce mitigation requirements for forestry operations both in relation to this scheme and works going forward.</p> <p>The three heritage features ground truthed and photographed in February and July 2024 by the author of this report. No above ground heritage was found but ground cover vegetation and forestry prevented a clear view</p>
<p>The following stakeholders responded without comment or issues:</p> <p>Historic Environment Scotland, RSPB (referred to the local raptor group), River Annan fisheries referred to Galloway Fisheries trust who provide scientific support and expertise to ADSFB.</p>		
<p>The following stakeholders were contacted during scoping but did not respond:</p> <p>D&G Council Timber transport, HAUC, Neighbouring residents, SEPA</p>		

Appendix II: Historic Environment records

Historic Environment Records						
Map ref	Designation	Name	Feature Description	Grid Reference	Importance	Area (ha)
1	Unscheduled Heritage feature	Gledenholm Moor Cairnfield (Prehistoric) (Canmore ID 65757)	In 1967 there was a small, widely scattered cairnfield on the west face of a long ridge lying east of a damp hollow on Gledenholm Moor. In 1977 the site was re-visited and the cairns could not be in an area of afforestation. The Dumfries & Galloway Archaeologist suggested that the site is ground checked.	NX 9764 8782	Unscheduled heritage	6.88
2	Unscheduled Heritage feature	Gledenholm Moor Field system and palisaded settlement (Canmore ID 65777)	This site was excavated in 1966-8. A single palisade trench with an oval enclosure 125' wide. Another smaller trench and post holes were found along with some artifacts & a very small cairnfield. In 1976 after the site was forested, this heritage was revisited and the excavation site had been left open, but neither the palisade trenches, post holes, or cairns are now visible. The Dumfries & Galloway Archaeologist suggested that the site is ground checked.	NX 9871 8801	Unscheduled heritage	0.36
3	Unscheduled sheep fold		This feature is not recorded on Canmore or Forester web, but the Dumfries & Galloway Archaeologist noted that it was present on the first edition OS map and should be confirmed by ground truthing.	NX 9798 8800	Unscheduled heritage	?
4	Unscheduled sheep shelter		This feature is not recorded on Canmore or Forester web, but the Dumfries & Galloway Archaeologist noted that it was present on the first edition OS map and should be confirmed by ground truthing.	NX 9867 8770	Unscheduled heritage	?

NB. The three heritage features marked as 'Heritage impact zones' on map 9, were visited and photographed in February and July 2024 by the author of this report. No above ground heritage was found, however ground cover vegetation and forestry didn't allow for a clear view.

Appendix III: 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	<ul style="list-style-type: none"> Fell date can be moved within 5-year period where separation or other constraints are met. 	<ul style="list-style-type: none"> Up to 10% of coupe area. 	<ul style="list-style-type: none"> Up to 3 planting seasons after felling. 	<ul style="list-style-type: none"> Change within species group e.g. evergreen conifers or broadleaves. 		<ul style="list-style-type: none"> Increase by up to 5% of coupe area 	
Approval by exchange of letters and map	Y	<ul style="list-style-type: none"> Advance felling of Phase 2 coupe into Phase 1 	<ul style="list-style-type: none"> Up to 15% of coupe area 	<ul style="list-style-type: none"> Between 3 and 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised. 		<ul style="list-style-type: none"> Additional felling of trees not agreed in plan. Departures of > 60m in either direction from centre line of road 	<ul style="list-style-type: none"> Increase by up to 10% of coupe area Any reduction in open space of coupe area by planting. 	<ul style="list-style-type: none"> Up to 5ha
Approval by formal plan amendment may be required	Y	<ul style="list-style-type: none"> Felling delayed into second or later 5-year period. Advance felling (phase 3 or beyond) into current or 2nd 5-year period. 	<ul style="list-style-type: none"> More than 15% of coupe area. 	<ul style="list-style-type: none"> More than 5 planting seasons after felling, subject to the wider forest and habitat structure not being significantly compromised. 	<ul style="list-style-type: none"> Change from specified native species. Change Between species group. 	<ul style="list-style-type: none"> As above, depending on sensitivity. 	<ul style="list-style-type: none"> In excess of 10% of coupe area. Colonisation of open space agreed as critical. 	<ul style="list-style-type: none"> 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

Larch Tolerance Table

	Adjustment to Felling period	Timing of Restocking and species component	Felling of larch within a mixed coupe	Changes to Road Lines
FC Approval normally not required	Fell date for phase 2 can be moved forward where larch comprises 50% or more of the coupe species component.	changes to restocking proposal that exclude larch and closely related species in the same genus, eg Sitka and Norway Spruce. Up to 3 planting seasons after felling		
Approval normally by exchange of letters and map	Felling moved between phases 1 and 2 where larch comprises less than 50% of the coupe species component	Changes to restocking proposals that include larch or closely related species in the same genus, eg Sitka and Norway Spruce. Between 3 and 5 planting seasons after felling	Areas of pure larch up to 20% of coupe area within phase 1 and 2 can be felled to remove the sporulating host, with restocking deferred until the rest of the crop is felled. Where the Larch constitutes more than 20% of the coupe component, then the whole coupe must be felled and restocked together.	New road lines (subject to EIA screening opinion) or tracks within existing approved plans necessary to allow the extraction of Larch material. Where necessary Prior Approval should be dealt with directly with the relevant Regional Council
Approval by formal plan amendment is required	Advance felling into current or 2 nd phase for pre-emptive larch removal			Where a new public highway entrance or exist is required. Where necessary Prior Approval should be dealt with directly with the relevant Regional Council

Larch felled in the autumn and winter, when the presence of P.ram cannot be assessed visually must be treated as infected and will therefore require a movement licence. When carrying out operations where the clearance has not been on the Public Register or through the consultation procedure it is important that due diligence is undertaken to identify sites that will require to be protect.