



Forestry and
Land Scotland
Coilltearachd agus
Fearann Alba

Little Clyde

Land Management Plan 2024-2034 South Region

Plan Reference No:

Plan Approval Date: 2024

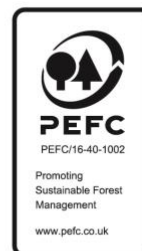
Plan Expiry Date: 2034

We manage Scotland's national forests and land 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



A. Description of Woodlands

A.1 Property Details

Property (LMP) Name:	Little Clyde
Grid Reference (main entrance):	NS 986 159
Nearest town or locality:	Elvanfoot
Local Authority:	South Lanarkshire

A.2 Location and Background

The Little Clyde Land Management Unit is a forest block covering 663 ha and is located around 1.5 km to the east of Elvanfoot, South Scotland. Little Clyde lies adjacent to the north-eastern edge of the M74. It is part of Scotland's national forests and land, owned by Scottish Ministers on behalf of the people of Scotland, and managed by Forestry and Land Scotland (FLS).

The site was converted from upland pasture to forestry in the 1970s, absorbing a small area of long- existing plantation in the west of the site. Approximately 245 ha of the elevated northern section of the site is part of the Little Clyde Wind Farm Development. There are 13 turbines within the LMP area. This northern section of the site is managed by SSE. Their Habitat Management Plan prescribes this area to be maintained as a combination of native woodland, scrubland and open habitat. There is however currently an issue with Sitka spruce regeneration. FLS manage the remaining 417 ha on a predominantly clearfell and restock management system. Archaeology is a factor at Little Clyde as there are four scheduled monuments associated with the site.

See Map 1.

A.3 Existing Schemes and Permissions

Type: Forest Design Plan – Little Clyde (EXPIRED)

Ref. No: FDP211

Details: Valid from 17 Dec 2013 - 17 Dec 2023

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. Scheduled monument and heritage feature protection (Section C.2.10).
2. Gas & ethylene pipeline protection. (Section C.2.15).
3. Drinking Water Protected Areas and Private Water Supply (Section C.2.15).
4. Public access (Section C.2.9)
5. Sitka spruce regeneration in areas designated as open habitat or mixed native broadleaf (Section C.2.11).

A.5 Long Term Vision and Management Objectives

Vision

The vision is for Little Clyde to successfully fulfil sustainability goals by providing economic, environmental and landscape benefits to the local area and the wider public forest estate. These benefits are to be in the form of renewable energy production, sustainable timber supply, high provision of habitats for biodiversity and improvement to the M74 corridor landscape. The rich archaeological interest present at Little Clyde is to be preserved and protected. The forest will become home to a diversity of tree species adapted to the soil conditions and current and future climate, thus providing resilience to pests, diseases and extreme weather events.

Management Objectives

Objective 1: Sustainable timber: Maintain a supply of sustainable timber via site suitable species selection when restocking, continuing to diversify the age and species structure of the forest within the restrictions of exposure and stand stability.

Indicator of objective being met: Age class distribution to progress to a more even spread, specifically an increase to the percentage in the 21-40 class while maintaining at least 20% cover in both the 0-10 and 11-20 classes within the plan period (see Table 2). Reduce the dominance of Sitka spruce by at least 10% whilst increasing the percentage of alternative conifers by 10% over the plan period.

Objective 2: Historic environment and landscape: Protect the historic environment, specifically the four scheduled monuments on the site. Continue to improve landscape value of the block, especially along the highly visible lower slopes.

Indicator of objective being met: Progressive increase in species diversity over the plan period within highly visible coupes 13010 (SS to SP/BI), 13016 (SS to SP/BI), 13008 (SS/Open/MB to NMB & SP/BI), and 13004 (SS/JL to SOK/SYC & SP/BI & SS/LP). Adherence to scheduled monument buffer zones and the undertaking of an archeological survey following the felling of coupe 13003.

Objective 3: Biodiversity: Expand native broadleaf cover along riparian edges, linking the broadleaf area in the north of the site to the mixed broadleaved areas in the south. Provide red squirrel and raptor refuges via the retention of mature coupes in sheltered locations. Improve black grouse habitat by expanding open heath areas along northern boundary of the site.

Indicator of objective being met: Increase in native broadleaf distribution across the block from 6% to 10% over the plan period (Table 1). Ensure areas of long-term retention (Map 4). Continue to liaise with SSE to encourage reduction of spruce regeneration in open habitat area within the Habitat Management Plan area.

A.6 General Site Description

A.6.1 Topography and Landscape

Little Clyde is predominantly south facing with an elevation ranging from 290m to 540m above sea level. The block forms part of the Lowther Hills and is located immediately south of the Southern Upland Fault. There are four summits north of the forest block with three associated watercourses running north to south with corresponding shallow cleuchs. A fourth watercourse runs east to west in the south-east of the site. There are no slopes over 30 degrees within the Little Clyde block.

Little Clyde has no landscape designations and is predominantly categorised as SNH Landscape Character Type (LCT) 217: Southern Uplands - Glasgow and Clyde Valley. This LCT has a bold upland character very different to the lower moorlands and hills to the north and west. It is part of a 'large-scale upland landscape with strong but smooth relief'. This lends itself to larger coupes on the upper slopes of the plan area.

The block lies just to the northeast of the M74 and as such is highly visible from the motorway. The site was originally planted in the 1970s with even aged pure stands of Sitka spruce and some larch. Wind turbines now dominate the upper reaches of the block, while the lower slopes remain predominantly productive conifer stands. Compulsory felling due to Statutory Plant Health Notices has resulted in unnatural breaks in the landscape and exacerbated issues with windblow. Improvements have been made over the duration of the

previous Forest Design Plan, by beginning the process of species and age diversification and expanding native broadleaf cover on the lower slopes and along the cleuchs.

A.6.2 Geology and Soils

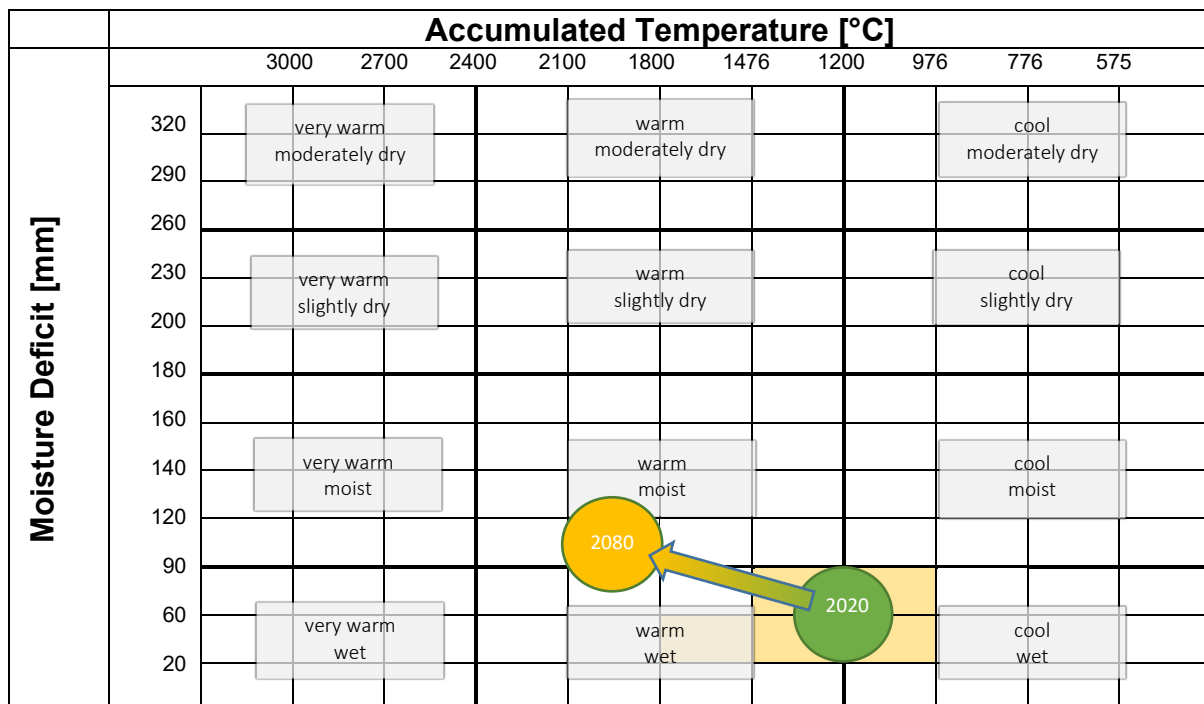
The majority of the soils on site are of the Ettrick Soil Association. The parent materials in the west of the site are Shinnel Formation - Wacke drift deposits resulting in a Wacke sandstone and siltstone lithology. In the east they are Mindork Formation – Metasandstone and metamudstone resulting in medium to coarse grained greywacke. The soils depth is quite shallow in some areas of the block thus limiting root growth and potentially negatively impacting tree stability. There are superficial deposits of Diamicton along the cleuchs and gravel, sand and silt deposits on the lower reaches.

The resulting soils are dominated by moderately acidic ironpans and peaty surface water gleys with small areas of upland brown earths, typical surface water gleys and blanket bog and peaty rankers. Soil nutrient levels are very poor to medium and soil moisture levels range from slightly dry to wet. The ironpans have a perched water table often with a peaty surface layer and have very poor nutrient availability. The gleyed areas are generally wetter with higher nutrients. There are small, isolated areas of bog, mostly *Calluna*, *Eriophorum vaginatum* blanket bog, which do not merit and would not be suitable for restoration. The very poor to poor nutrient availability found across much of the block will limit species choice.

See Map 8.

A.6.3 Climate

The current climate at Little Clyde is cool/warm and wet. The most challenging growing conditions are in the north of the site due to the high elevation and associated exposure (approximately 400-500m asl). The climate is projected to transition to warm and moist by 2080 (<https://www.forestdss.org.uk/geoforestdss>). See below:



A.6.4 Hydrology

There are four watercourses within Little Clyde. Three of which feed the River Clyde. Evan Water, in the east, feeds the River Annan. The River Clyde (covering the west side of the LMP area) overall quality is Moderate, although the water quality is rated Good. The overall quality of the Evan Water (in the east of the LMP area) is Poor (due to poor access for fish migration) but the water quality is rated as High.

See Map 3.

A.6.5 Windthrow

The current susceptibility to windthrow is high. All the remaining mature crop was planted in the 1970s and has therefore reached or is close to reaching maximum Mean Annual Increment (MAI) and thus ready for harvesting.

The DAMS range is from 14 to 20. Storm Arwen left a legacy of damage on the northern exposed edges of some coupes. In addition, SPHN felling of diseased larch has left unprotected brown edges (coupe 13017 and 13003). The current percentage of windthrow is approximately 3% of the total LMP area (7% of the afforested area). The risk of windthrow

must be balanced with the need to continue age diversification and retain some mature crop for nesting birds.

See Map 10

A.6.6 Adjacent Land Use

The Clyde Wind Farm surrounds the site to the west and north. To the north is open hill grazing. The area to the northwest is managed by Tilhill as a productive forest. The areas adjacent to Little Clyde around Bodsberry Hill were recently felled and are due to be restocked with SP on the lower western slope and SS on the eastern slope. The summit of the hill will remain unplanted due to the scheduled monument.

The land to the east of the site is also productive forest, managed by Fountains Forestry. Much of this stand has also been felled in recent years. The east side of Nap Hill which borders Little Clyde is due to be felled imminently and the south side in the next 5 years. This will potentially increase the windthrow risk to FLS's crop on the north side of the Nap Hill.

A.6.7 Access

Little Clyde has limited public access provision, however the forest roads are generally in good repair and are used by dog walkers and hill walkers. There are no dedicated footpaths within the forest, although a core path runs adjacent to the southern boundary of the site (along the B7076).

A.6.8 Historic Environment

There are 4 scheduled monuments which are either within or overlap the Little Clyde block:

- Bodsberry Hillfort.
- Bodsberry to Little Clyde Roman Road.
- Fall Kneesend enclosed cremation cemetery.
- Little Clyde Roman Camp.

There are also two areas of undesignated archaeological features:

- Bodsberry Hill cairnfield and field system.
- Fall Kneesend cairnfield field system, unenclosed settlement and ring.

See Map 3 and Map 9.

A.6.9 Biodiversity

There are no designated areas within Little Clyde. There is a small area (1.67ha) of Scots pine in the west of Long-Established Plantation Origin woodland.

There was a black grouse sighting in 2021 near the northern boundary fence and this northern area of the site is managed by SSE as open habitat to promote the grouse.

There are several breeding birds of prey on the site (mostly buzzards) and badger setts.

See Map 3

A.6.10 Invasive Species

There are no known invasive species present at Little Clyde.

A.7 Woodland Description

See Map 2 which shows the current tree species composition and pattern.

Little Clyde was planted in the 1970s with predominantly Sitka spruce and some areas of Japanese larch. The block also included 1.67ha of Scots pine of long-established plantation origin located in the west. Much of that remaining first rotation, therefore, is at or approaching the age of maximum Mean Annual Increment. Since the start of the previous plan a process of age class and species diversification has begun. This has resulted in an increase in alternative conifers and an increase in native woodland areas, especially along riparian edges. The northern 245 hectares (the Habitat Management Area) of the site was felled to accommodate the windfarm and is now managed by SSE as open habitat which transitions to native scrub and woodland before adjoining with the FLS managed area. Currently, however, there is significant Sitka spruce regeneration in the Habitat Management Area.

Table 1: Total LMP Area: Area by species

Plan area by species						
Species	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
Sitka spruce	279	42%	215.3	33%	188.2	28.5%
Other conifers	49.2	8%	93.4	14%	107.5	16.5%
Native broadleaves	40.9	6%	59.4	9%	65.9	10%
Other broadleaves	0.7	0%	1	0%	3.1	0.5%
Open ground	239.3	36%	278.4	42%	292.5	44%
Fallow	53.5	8%	13.9	2%	3.1	0.5%
Total	662.6	100%	662.6	100%	662.6	100%

Table 1a: SSE Habitat Management Area: Area by species

Plan area by species						
Species	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
Sitka spruce	54.0	22%	0	0%	0	0%
Other conifers	0.0	0%	0.0	0%	0.0	0%
Native broadleaves	30.6	12%	26.7	11%	26.7	11%
Other broadleaves	1.3	1%	0.0	0%	0.0	0%
Open ground	149.8	61%	218.3	89%	218.3	89%
Fallow	9.3	4%	0.0	0%	0.0	0%
Total	245.0	100%	245.0	100%	245.0	100%

Chart 1: Total LMP Area: Area by species

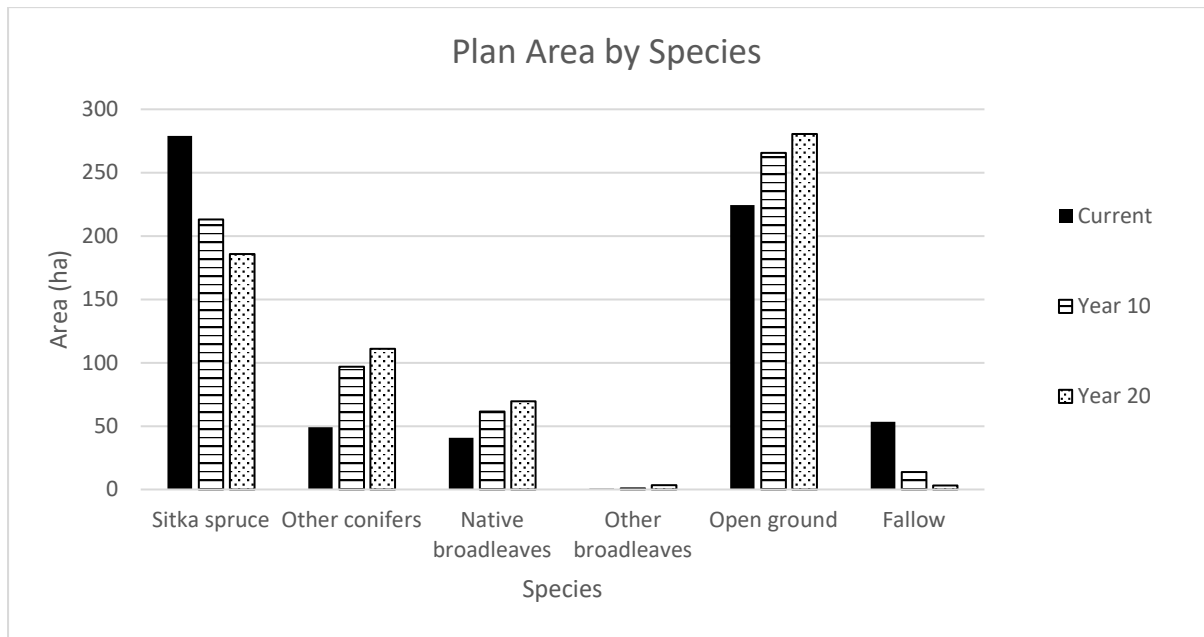
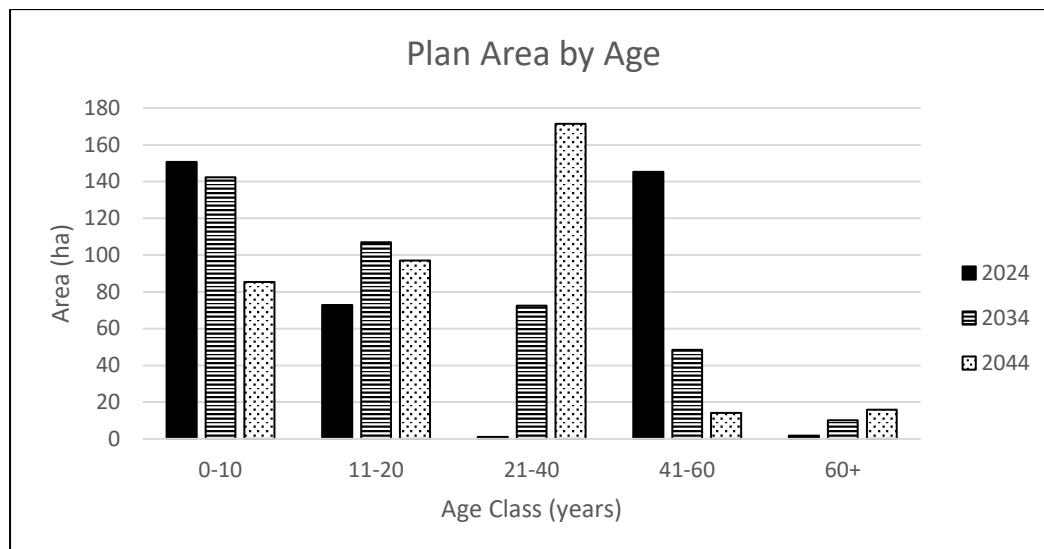


Table 2: Area by age

Plan area by Age						
Age Class (years)	Current Area (ha)	%	Year 10 Area (ha)	%	Year 20 Area (ha)	%
0 – 10	150.7	41%	140.5	37%	84.4	22%
11 – 20	72.8	20%	107	28%	95.1	25%
21 – 40	1	0%	72.5	19%	171.4	45%
41 – 60	145.3	39%	48.5	13%	14.3	4%
60+	1.7	0%	10.2	3%	15.9	4%
Total	371.5	100	378.7	100	381.1	100

Chart 2: Area by age



A.8 Plant Health

Phytophthora ramorum: Previous cases of infected trees were found at Little Clyde and subsequent SPHNs in coupe 13009 and 13012 (previously 13389) lead to the felling order of the previous plan being disrupted. There is still some larch present in coupes 13001, 13002, 13017 and 13004 but currently there are no known infections. This and subsequent plans will progressively remove the larch via a programme of thinning and clearfelling.

Dendroctonus micans: The Great spruce bark beetle is currently present at Little Clyde. There are a number of dead spruce in the south west of the site (coupe 13017) with more showing signs of infestation. Control agent *Rhizophagus grandis* has been released at Little Clyde by Forest Research to combat the beetle.

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"> • Exposure and elevation limits species choice and limits ability to thin on higher more exposed areas. • Large areas of very poor to poor ironpan and wet surface water gleys limits species choice. • Ironpans with a thin peat layer on top results in flat rooting species (spruce) sitting in the peat layer, increasing windthrow potential. • Peaty surface water gleys at risk of compaction. • Remaining mature crop now mostly un-thinned 45-year-old SS and becoming unstable. • Issues with adjacency and suitably stable areas for long term retention. • Road network requires expanding to access some coupes. 	<ul style="list-style-type: none"> • Opportunities to increase sawlog production and improve diversity and stability in more exposed areas via nursing mixtures to improve rooting profile and increase wind firmness and resilience. • SS regenerating well in some locations presenting future opportunities for the implementation of CCF systems. • Thinning possible on lower, more sheltered areas thus increasing sawlog production. • Drier ironpan soils and surface water gleys with a better nutrient regimes provides opportunities for diversification and increases opportunities for natural regeneration. • Previous SPHNs on slightly better soils also provide early opportunities for species diversification. • Accessible site, very close to motorway and sawmills.
Water	<ul style="list-style-type: none"> • Three burns run into the River Clyde and a fourth runs into the Evan Water (a tributary of the River Annan). • Overall conditions of the River Clyde is moderate although water quality is good. 	<ul style="list-style-type: none"> • Introduction of broadleaved riparian zones following felling of existing conifer stands provides opportunity to maintain and improve water quality on site and prevent acidification.

	<ul style="list-style-type: none"> Overall condition of the Evan Water is classed as Poor. Although water quality is rated high. 	
Historic Environment	<ul style="list-style-type: none"> Fall Kneesend enclosed cremation cemetery surrounded by mature crop – needs protecting when harvested. Roman road restricts extraction options from far west of site. Bodsbury Hillfort and Roman camp overlap LMP boundary. Potential additional archaeological features at Falls Kneesend. Operations which encroach on Scheduled Monuments require Schedule Monument Consent prior to operations. 	<ul style="list-style-type: none"> Opportunity to maintain and where necessary increase open buffer protection around scheduled monuments to 20m when restocking (as per FLS Practice Guide): Bodsbury Hillfort, Fall Kneesend cremation cemetery, Bodsbury Hill to Little Clyde Roman road and the Little Clyde Roman Camp. Also, potential to expand open area to include additional archaeological features around Fall Kneesend cemetery following the felling of coupe 13003.
Biodiversity	<ul style="list-style-type: none"> Significant SS regen in many areas of the Habitat Management Area (northern windfarm section of site) is a challenge to successful establishment of native species and retention of open heath habitat. SS regen beginning to impinge on ability to control deer. Some of the broadleaf species have not survived the exposure or soil conditions and are suffering from browsing in the shorter tubes. Age and exposure of most of mature crop makes finding areas for longer retention difficult. 	<ul style="list-style-type: none"> Previous creation of open area and native woodland in the Habitat Management Area provides opportunity to engage with SSE to encourage active management to allow the successful establishment of native woodland and maintenance of open heath areas to promote black grouse habitat. Opportunity to continue converting the riparian corridors to native broadleaves to link native broadleaved areas through the high forest to increase biodiversity and habitat provision. Mature conifers retention would benefit red squirrels and bird nesting sites for raptors. Small area of Long Established Plantation Origin woodland in the west of the site consisting mostly of Scots pine providing

		opportunities for increased biodiversity and expansion of this long retention area.
Landscape	<ul style="list-style-type: none"> • Little Clyde highly visible from the M74 and A702 and larch SPHN clearfells have broken up the landscape unfavourably and subsequent exposed edges are being impacted by windblow. 	<ul style="list-style-type: none"> • Potential to improve visual impact of Little Clyde as viewed from the south, specifically the M74, and the A702 around Elvanfoot. • Mature age of remaining first rotation coupes and previous SPHNS provide opportunities to diversify crop and redesign coupes.
Climate	<ul style="list-style-type: none"> • Future climate may result in warmer drier summers and more wet winters presenting issue for drought prone species on freely draining soils. • Stability of shallow rooting species on sandy ironpans with shallow peat layers may be negatively affected by drier summers and more wet winters. 	<ul style="list-style-type: none"> • Much of mature crop due for felling and majority of larch has been removed providing opportunity for continuing diversification over upcoming phases. • ESC modelling suggests local climate to move from current cold and wet classification to warm and moist by 2080 providing increased suitability for alternative species. • Opportunity to diversify with drought resistant and heart rooting species such as pine.
Roads and haulage	<ul style="list-style-type: none"> • Additional roading required to reach coupe 13013, coupe 13004 and 13010. • Apart from small borrow pits there is currently no existing formal quarries to provide stone for this additional roading. 	<ul style="list-style-type: none"> • Opportunity to utilise the Woodland Management Fund paid annually by SSE to contribute towards costs. • Opportunity to create quarries and source sufficient stone for additional roading on site, reducing the financial and environmental costs of the new roading. • Additional roading will allow access for subsequent thinning operations thereby increasing the potential for introducing Low

		Impact Silvicultural Systems in less exposed areas.
Plant Health	<ul style="list-style-type: none"> • <i>Dendroctonus micans</i> present in coupe 13017 resulting in a number of dead/dying spruce. • Previous <i>P.ramorum</i> infections and national policy prevent the replanting of larch. 	<ul style="list-style-type: none"> • Opportunity to remove infested areas and diversify species in that location. • Opportunities to diversify on some of the better soils due to larch removal.
Utilities	<ul style="list-style-type: none"> • 13 wind turbines are sited at Little Clyde managed by SSE (export cable exits northern boundary of site). • There are 2 pipelines present (1 gas & 1 ethylene) which require safe crossing to access coupe 13013. • There is one Private Water Supply within the LMP area. Mature crop around private water supply is becoming unstable. One PWS is situated approximately 1.5km to the SW. 	<ul style="list-style-type: none"> • The windfarm provides additional income for FLS and a site specific Woodland Management Fund to be spent on forest operations within Little Clyde. • Opportunity to install new road to access 13013 with permanent crossing point for pipelines. • On site private water supply presents opportunity to convert area surrounding PWS to minimum intervention mixed broadleaved coupe. Impact on off-site private water supply will be minimal, if any

Concept

A sustainable timber supply will be ensured by continuing to diversify both age and species within the block. Thinning will progressively be implemented on the lower slopes as crops reach first thinning age. Alternative species and mixtures will be used to improve nutrient recycling, wind firmness and to promote diameter growth via self-thinning nursing mixtures on the higher slopes. A diversity of productive species, both conifer and broadleaved will provide resilience to climate, pests and market fluctuations.

Coupes will be redesigned to be more sympathetic to the landscape and to introduce more diversity on the lower more visible slopes. The most visible areas will aim to maintain canopy cover via transitioning to either minimum intervention or low impact silvicultural systems.

The historical environment will continue to be protected via the maintenance of scheduled monuments and the increase of buffer areas where appropriate. Opportunities to expand protection to additional archaeological feature will be considered.

Biodiversity will be improved at Little Clyde via the continued expansion of broadleaved cover along riparian zones and the lower unproductive areas. The northern Habitat Management Area will continue to be managed for native biodiversity and the spruce regeneration in that area will be addressed.

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

C. Management Proposals

C.1 Silvicultural Practice

To date Little Clyde has been exclusively managed on a clearfell and restock silvicultural system. For the duration of this plan this will remain the predominate silvicultural method due the age of the mature crops and the lack of any thinning which has taken place during the last rotation. Once restocked, however there is scope to conduct thinning on the lower slopes going forward, thus providing opportunities for low impact silvicultural systems (LISS) to be introduced in some coupes (although this is outside the current plan period).

C.2 Prescriptions

C.2.1 Felling

Sites proposed for clear felling in the plan period are identified as Phase 1 and Phase 2 management coupes on Map 4. Refer to Table 3 for scale of felling.

Felling of Phase 1 coupes 13007 and 13001 require Scheduled Monument Consent due to the presence within the coupe boundaries of the Bodsbury Hill to Little Clyde Roman Road and Little Clyde Roman camp respectively Felling of Phase 2 coupe 13013 would also require Scheduled Monument Consent due to the presence within the coupe boundaries of the Little Clyde Roman Camp footprint (see Map 4 and Map 9).

Stands adjoining felled areas will be retained until the restocking of the first coupe has

reached a minimum height of 2m. Phase 1 and 2 clearfell coupes identified in this plan with known adjacency issues are listed below with the planned approach to achieving height separation. 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.

Phase	Coupe No	Adjacency issues	Mitigation
1	13017	13006, 13118, 13037	13017 restocking (excluding the previously felled SPHN area) will be delayed 3 years to allow 13006, 13118, 13037 to reach 2m, additionally 13017 will be restocked with 3 distinct areas, one containing SS/LP, one with NF and one with BI/SP allowing height separation within this large coupe via differing growth rates. It is expected the coupe will then be subdivided.
1	13009	13006	This coupe was felled early following an SPHN leading to an adjacency issue with 13006. This will be dealt with by splitting the coupe following restocking to create 3 smaller coupes and then adjusting the felling of the coupes adjacent to 13006 to introduce the necessary adjacency.

Any other planned tree felling (e.g. selective felling, felling of individual trees, or felling of coppice) is shown on Map 5.

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].

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.

Map 5A shows the areas to be thinned within the plan period. In both cases these will be first thinnings. Once the crop reaches 10-12 metres top height a rack and matrix crown thinning will be carried out.

C.2.3 Low Impact Silvicultural Systems (LISS)

Areas identified for LISS management are shown on Map 4. The lack of thinning to date means none of the existing mature crop is suitable for CCF conversion. Coupes 13118 and 13111, have been identified for management via LISS but due to the young age of these coupes no interventions are required within the plan period.

Coupes with future potential for LISS systems following restocking are the southern sections of 13004, 13012 and 13017 and also, 13003, 13010, and 13013. Strip shelterwood systems would be most suited at Little Clyde given the level of exposure in the block. In the most sheltered areas uniform shelterwood may be possible.

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

Stands identified as LTR and Natural Reserve are shown on Map 4. This makes up 18.15 ha of the plan area, equating to 2.7% of the plan area and 4.3% of the productive forest area.

13026 – LTR – This is the only area of long established (plantation origin) woodland on the site, as such it is likely to provide a higher ecological value than some other coupes in the block. The aim is to maintain the SP in this coupe and expand the SP area to the east into the adjacent coupe when restocked.

13025 - LTR – Due to the high proportion of even aged crop approaching felling age it is necessary to retain some mature trees where possible. This coupe has a windfirm green edge and will continue to provide shelter for the coupe to the north once that has been felled & restocked.

13014 – LTR – The aim is to retain some mature standing in the east of the block whilst other coupes are felled and restocked. This area is reasonably sheltered and has a windfirm edge which will help retain some landscape and habitat value following the felling of 13013.

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

Scale of Proposed Felling Areas										
Total Plan Area			663 ha							
Felling	Phase 1	%	Phase 2	%	Phase 3	%	Phase 4	%	LTR	%
Area (ha)	43.1	6.5	62.5	9.4	35.6	5.4	0	0	0	0

Table 4: Thinning

Thinning over the first 10 years of the plan	
Coupe 13002	21.6 ha
Coupe 13005	28.9 ha
Coupe 13007	24.3 ha
Total area where thinning may be undertaken during the plan period	74.8 ha
Total area where thinning may be undertaken within the LMP area	351 ha

Table 5: Restocking

Felling Phase	Map Identifier (coupe number)	Species to be planted - or established through natural regeneration (nr)	Area (ha)*
1	13009	SS 60%, LP 40%	14.5
		SS 60%, SP 40%	6.8
		SS 100%	4.7
		SS 70%, ASP 30%	3.2
		SP 60%, SBI 40%	2.1
		NMB 100%	1.3
1	13012	NF 90%, PBI 10%	5.5
		SS 60%, LP 40%	3.1
1	13016	SP 60%, SBI 40%	1.8
1	13018	NMB 100%	0.9
1	13019	NMB 100%	1.6
1	13001	NMB 100%	0.8
1	13017	SS 60%, LP 40%	24.0
		PBI 60%, SP 40%	6.2
		NF 90%, PBI 10%	3.7
		NMB 100%	2.1
2	13010	SP 60%, SBI 40%	4.8
		SS 70%, ASP 30%	4.1
		NMB 100%	1.1
2	13013	SS 60%, SP 40%	16.3
		SS 60%, LP 40%	14.8
		SS 60%, LP 40%	6.2
		NMB 100%	4.1
		NF 100%	0.7
Total Restocking Area (ha)			136.1

*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 and 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.

Broadleaved species outside the fenced areas below will be protected via a combination of biodegradable tubes and alternative methods such as annual applications of Trico.

C.2.7 Fence erection / removal

1km deer fencing required around PBI/SP restock in coupe 13017.

750m deer fencing required around SS/ASP restock in coupe 13009.

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'. Any planned new roads or quarry expansions in the plan period are also indicated on this map. The lengths of planned new roads are given on the map and are reflected in the EIA determination submitted with the plan (See Appendix IV).

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 absolutely necessary and will keep disruption to a minimum.

Little Clyde has low visitor numbers, as such there are no current plans to expand public access infrastructure in this location, although stakeholder responses in this regard have been passed to the local FLS Visitor Services Team.

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 also with 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.

Felling of Phase 1 coupes 13007 and 13001 require Scheduled Monument Consent due to the presence within the coupe boundaries of the Bodsbury Hill to Little Clyde Roman Road and Little Clyde Roman camp respectively. Felling of Phase 2 coupe 13013 would also require Scheduled Monument Consent due to the presence within the coupe boundaries of the Little Clyde Roman Camp footprint (see Map 4 and Map 9).

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 42%.

The northern section of the block is SSEs Little Clyde Habitat Management Area and is managed by SSE as open heathland and grass land mosaic in the most elevated areas, transitioning to upland scrub and woodland at the boundary of the FLS management area. SSE's Habitat Management Plan for this area is available upon request. These areas are intended to provide black grouse habitat and additional native woodland and scrub land habitat. Currently, there is an issue with Sitka spruce regeneration in the Habitat Management Area, which is in the process of being addressed by SSE.

Riparian corridors across the site are in the process of being widened and planted with native broadleaves following the felling of existing mature stands. These will act as wildlife corridors between the lower and upper reaches of the site.

The area to the south of the site (Coupe 13008) is to be managed as minimum intervention for the benefit of native species and enhancing biodiversity.

Coupe 13026 is Long Established Planation Origin woodland and as such will have additional biodiversity. This coupe will be retained and the Scots pine area will be expanded into the adjacent coupe.

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. Areas of natural reserve will offer some of the best opportunities for the development of standing and fallen deadwood. Where it is safe to do so, standing mature dead trees will be retained as these offer excellent potential for a range of species.

C.2.12 Tree Health

Phytophthora ramorum has previously been found within the block and has resulted in SPHN fellings of larch via approved plan amendments in 2020 (Coupe 13009) and 2022 (Coupe 13012).

The remaining larch in coupe 13017 and 13001 will be felled in Phase 1. Larch in Coupe 13004 will be felled in Phase 3. This will leave only coupe 13002 containing larch (planting year 2012). The larch in this coupe will be progressively thinned out once the crop reaches a thinnable height of 10-12m (estimated first thin between 2028-2033).

Dendroctonus micans is also present on the site and previously the predatory beetle *Rhizophagus grandis* has been released at Little Clyde to combat the beetle. Continued infestation will be dealt with by felling of much of the infested crop and liaising with Forest Research if subsequent releases of *R.grandis* are required.

C.2.13 Invasive Species

There are no known issues with other invasive species 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

Private water supply located within the plan area. See the Confidential PWS assessment in Appendix V.

Little Clyde is partly within a drinking water catchment where a Scottish Water abstraction is located and as such is designated as a protected Drinking Water Area. UKFS and Forest and Water Guidelines will be adhered to and the Guidance on Forestry Activities Near SW Assets will be taken into account. Scottish Water will be notified without delay following any incident. See Appendix 1

13 turbines from the Clyde Windfarm are located within northern section the plan area (Habitat Management Area: coupes 13099, 13011, 13021). The lease is due for renewal in 2038. Management of that section of the site is the responsibility of SSE. SSE pay into a Habitat Management Fund annually which can be used by FLS for forest management within the rest of the block.

Pipelines: There are two pipelines running adjacent to each other at Little Clyde in the south-east of the site. One is a national grid gas pipeline and the other is the ethylene pipeline which runs from Grangemouth to Wilton (managed by Sabic [SABIC - SABIC UK Cross Country Pipelines](#)). Liaison with the pipeline operators is required prior to any works or felling operations which impact the pipeline buffer zone. See Appendix I

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

Table 6 – EIA projects (in Phase 1)

Total area (hectares) for each project type and details by sensitive or non-sensitive area.					
Type of Project	Sensitive Area		Non-sensitive Area		Total
Afforestation	%Con	%BL	%Con	%BL	0ha
Deforestation	%Con	%BL	%Con	%BL	0ha
Forest Roads	0ha		11.4ha		11.4ha
Quarries	0ha		1.3ha		1.3ha
Provide further details on your project if required.					

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 (windiness)

Map 11A – Private water supplies – CONFIDENTIAL

Map 11B – PWS – S01 | S02 - CONFIDENTIAL

Appendix I – Consultation record

Appendix II – Historic environment records

Appendix II – Tolerance table

Appendix IV – Environmental Impact Assessment Screening Opinion Form

Appendix V – Private Water Supply - 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
Scheduled monument and heritage feature protection	Ancient Monuments Officer, Historic Environment Scotland	<p>Supportive of the draft concept and agreed with recommendations to <i>‘maintain and where beneficial increase buffer zones’</i> and to seek Scheduled Monument Consent where necessary. They also welcomed the aim to consider <i>‘options for increasing the preservation of features surrounding Fall Kneesend cemetery’</i>. They also recommend that the management plan makes provision for regular monitoring and control of regenerating trees, other woody growth and bracken on the monuments and within their buffer zones.</p> <p>Feedback from HES following plan being on SF public register:</p> <p><i>We welcome that the monuments are clearly shown on the Concept Map and the Historic Environment Map, and that the applicant plans to ‘maintain and where beneficial increase buffer zones’ around them. The UK Forestry Standard recommends that a minimum buffer of 20m open ground be established and maintained surrounding all scheduled monuments.</i></p> <p><i>We also welcome the statement that ‘options for increasing the preservation of features surrounding Fall Kneesend cemetery’ will be considered. We recommend that the management plan makes provision for regular monitoring and control of regenerating trees, other woody growth and bracken on the monuments and within their buffer zones.</i></p> <p><i>We note that coupe 13017 is planned to be felled during phase 1 of the Plan. This coupe includes part of SM3941 Bodsberry Hill to Little Clyde, Roman Road. Scheduled Monument Consent would be required to fell any trees within the scheduled area, or for machinery to enter or traverse the monument. The applicant should contact us for advice, well in advance of the commencement of felling operations.</i></p> <p><i>We note that coupe 13001 would also be felled during phase 1; this coupe is adjacent to and may be partially within SM2745 Little Clyde, Roman Camp. Furthermore, coupe 13013, which is to be felled in Phase 2, appears to extend partially within SM2745.</i></p>

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
		<p><i>Scheduled Monument Consent would be required for forestry operations within a scheduled area.</i></p> <p><i>We welcome that the plan states “The rich archaeological interest present at Little Clyde is to be preserved and protected.”, and that Objective 2 of the plan is to protect the historic environment, specifically the four scheduled monuments on site.</i></p> <p><i>We recommend that the locations and extents of the monuments continue to be shown on all forest maps to help ensure that no accidental damage occurs within the scheduled areas in the course of forest operations.</i></p>
Gas & ethylene pipeline protection.	Asset Protection, National Gas Transmission	RAMS requirement for any works, and the types and weights of machinery that will be crossing the pipeline. Crossing point installation and approval also required. A list of RAMS was also provided and can be found in the correspondence folder associated with this LMP
Drinking Water Protected Areas	Regulatory Advisor – Scottish Water	<p>Highlighted that Little Clyde falls partly within a drinking water catchment where a Scottish Water abstraction is located. Scottish Water abstractions are designated as Drinking Water Protected Areas (DWPA) under Article 7 of the Water Framework Directive. Summit Spring supplies March Cottage Water Treatment Works (WTW) and it is essential that water quality and water quantity in the area are protected. In the event of an incident occurring that could affect Scottish Water should be notified without delay using the Customer Helpline number 0800 0778 778.</p> <p>It is likely to be low risk however water quality mitigations will be required to protect any nearby watercourses leading into the catchment.</p> <p>In addition to meeting the UK Forestry Standard (UKFS) and Forests and Water Guidelines, SW requested that the “Guidance on Forestry Activities Near SW Assets” is taken into account. Scottish Water have also provided a list of protection measures to be taken within a DWPA.</p>
Private Water Supply	Little Clyde Cottage	Met with the owner who showed the location of their PWS – see appendix V for more information.

Issue	Raised by	Requirement / Recommendation / Concern / Aspiration
Public access	Access Development Officer, South Lanarkshire CC, Local dog walker	Requested non-motorised public access to the site should be unrestricted and available for walkers, cyclists and equestrians. Improvements to surfacing and the creation of circular routes were requested to be considered. An issue with dog dirt was raised and a bin or signage requested.
The following stakeholders responded with no comment or no issues: Tilhill, Fountains Forestry.		
The following stakeholders were contacted during scoping but did not respond: South Lanarkshire Roads and Transportation; South Lanarkshire Planning; Scottish Forestry; SEPA; Little Clyde Farm; Nature Scot; RSPB; Ramblers Association; SSE; South Lanarkshire Community Councils; SABIC; West of Scotland Archaeology Service; Members of public via online form.		

Appendix II: Historic Environment records

Historic Environment Records						
Map ref	Designation	Name	Feature Description	Grid Reference	Importance	Area (ha)
1	Scheduled Monument	Bodsbury Hillfort	A scheduled fort, defended by a stone wall 5.5m thick, with a second wall on the NW and SE sides up to 3.4m wide. 4 gaps may represent entrances with the interior having possible traces of round houses. A well or cistern was excavated in 1864. See link: https://canmore.org.uk/site/47288/bodsberry-hill	NS 96365 16877	National	1.21
2	Scheduled Monument	Fall Kneesend enclosed cremation cemetery	<i>The monument comprises the remains of an enclosed cremation cemetery, a burial monument dating from the earlier Bronze Age (c.2000-1400BC). The monument was originally scheduled in 1973, but the area covered by the designation was not properly defined. The current rescheduling rectifies this.</i> <i>The enclosed cremation cemetery lies at around 310m OD on a SW facing hillslope overlooking the confluence of several burns to the S and W and their junction with the River Clyde approximately 1km to the W. The cemetery is circular, approximately 11m across and defined by a low unbroken stony bank which stands approximately 0.3m high and is up to 1m wide. The interior of the enclosure also appears to be stony with a possible slight mound in the centre. The area to be scheduled is a circle, 30m in diameter, centred on the cremation cemetery, as shown in red on the accompanying map.</i>	NS 97751 16460	National	0.07

Historic Environment Records						
Map ref	Designation	Name	Feature Description	Grid Reference	Importance	Area (ha)
			Above text from: http://portal.historicenvironment.scot/designation/SM3947			
3	Scheduled Monument	Little Clyde Roman Camp	A camp area with little information available. Within the camp area is a tradition of a tower house at this location. Reported by the farmer in 1955 to be where the farm midden is. A sword was reported recovered from the tower when it was demolished probably in advance of the construction of the farmhouse. See link: https://portal.historicenvironment.scot/designation/SM2745	NS993160	Uncategorised	18.3
4	Scheduled Monument	Bodsbury Hill to Little Clyde Roman Road	Line of a roman road, limited information available. See link: https://portal.historicenvironment.scot/designation/SM3941	NS972164	National	9.1
5	Undesignated	Fall Kneesend cairnfield, field system	First described as 3 hut circles, this is a group of cairns, some of which are scheduled as an enclosed cremation cemetery (see above).	NS978163	National	8.93
6	Undesignated	Bodsbury Hill cairnfield, field system	The remains of a multi-period field-system. The earliest elements may be of prehistoric date and comprise field-banks and small cairns. See link: https://canmore.org.uk/site/47305/bodsberry-hill#details	NS966164	National	3.88

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 ****
SF 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

Larch Tolerance Table

	Adjustment to Felling period	Timing of Restocking and species component	Felling of larch within a mixed coupe	Changes to Road Lines
SF 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 exit 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 protected.

Appendix IV: EIA screening opinion request form

See separate document.

Appendix V: Private Water Supply - CONFIDENTIAL

See separate confidential document.