



Appendix III: Background Information

Physical site factors

Geology, Soils and landform

The underlying geology is Precambrian formations of undifferentiated moines, mica schists and a band of Ballachullish limestone. The upper slopes and Chapman wood are on the edge of the Ben Nevis granite complex. The drift geology is predominantly diamicton till with large pockets of peat, glacial sands and gravels and alluvial deposits.

Part of the forest falls within the Parallel Roads of Lochaber SSSI and contains some of the glacial features of this Earth Science site. A more detailed features map is available.

Leith's Dornie Quarry in the forest straddles one of the fault lines and takes both quartzite and limestone rock along with the alluvial sand and gravel.

Soils

The forest has full soils survey data to 1:10k.

The soils underlying the forest are a complex mosaic of different soils with a predominance of bogs and peaty gleys on the lower lying strath. Small pockets of brown earths and podzols occur throughout the forest on the slopes and small rises. The older road to Tomnafet follows one such line above the wetter peaty soils of the strath. The upper slopes tend towards more podzols and iron pans.

The soils of around 75% of the forest are classed as very poor nutritionally and 20% of the area classed as very wet and a further 30% as wet. Further investigation of the potential of these poor soils to carry another rotation of productive conifers will be undertaken.

An assessment of the peat depth is required for the main strath as well as a determination of the practical boundary of the Lon Leanachain.

See Map 15

Landform

The forest lies within the broad floor of the Great Glen. The principal aspect of the forest is north facing with local topography giving small scale internal variations.

The landscape has been shaped by the last glaciation leaving an undulating terrain of low ridges and moraines across the broad forested strath.

The southern edge of the forest rises steeply at the foot of Aonach Mor presenting some challenges for harvesting operations. The burns form incised gullies and dramatic waterfalls in

this area of the forest. The main forest lies in the broad straths of the Lundy and the Allt na Caillith and to the east the Allt an Loin providing the accessible and more sheltered areas of current timber production. This is also the area where some of the deeper peats and the Lon Leanachain SSSI. A drier ridge to the north is also well suited to conifer production. The altitude ranges from 40-c650m with the timber line c330m. Birch and other native montane tree species are current found to c500m.

See Map 16 Steep Ground

Water

Allt na Caillith and the River Lundy flow west to join the River Lochy while the Allt an Loin flows eastwards taking the water from Lon Leanachain and the hills into the Cour on the eastern boundary of the forest which itself flows north into the River Spean and eventually the River Lochy.

The hydrology has been heavily modified by the original British Aluminium hydro scheme which diverted all the water from the hill burns into hydro electricity generation at the factory. A micro hydro scheme has recently been constructed on the Allt Coillie Rais, with the now requisite compensatory flow, providing power to the Nevis Range complex.

The River Lundy was modified in the 1940s and 50s for the generation of power for Inverloch Castle and also to provide water for Torlundy. These dams were removed in 2010 under a SEPA river restoration fund. This opened up a further 5km of spawning habitat to beyond Nevis Range base station.

The commercial quarry has installed a number of settling ponds to improve the management of fine sediments which have found their way into the Lundy in the past. Further alterations to the road alignment within the quarry as part of the expansion plans will further reduce the risk of pollution incidents.

See Map 17 Hydrology

Climate

In Lochaber the climate is mild, wet and windy, with average annual temperatures around 8 – 9 C and precipitation above 1800 mm per year. Although snow is less prevalent than eastern and central Scotland, the region is subject to rain bearing South Westerly winds. Humidity levels are high throughout the year, rarely sinking below 70% relative humidity. The wet conditions contribute to soil leaching and development of gleys and bogs where soils are insufficiently free-draining.

Climate projections point to a warmer climate with lower summer rainfall and higher winter rainfall. Climatically the forest is in one of the more favourable locations of Lochaber for tree growth. A warm, moist and moderately exposed climate exists along the A82 corridor and the straths of the river Lundy and the Allt an Loin. The River Lundy corridor and the eastern part of the forest are the most sheltered. The conditions become cooler and wetter with altitude but only become sub-alpine at the upper margins of the forest.

The District's wet temperate climate (which is unlikely to become drier under climate change scenarios) is especially suitable for Sitka spruce. A broad range of tree species grow well in the District but vigilance to climate change will be maintained.

Most of Leanachan forest is classed as moderately exposed with DAMS scores of 15 or less with the more sheltered areas to the east. This would allow for thinning to take place in suitable stands.

Windblow has, however, affected the upper area of Chapman Wood; this appears to have been caused initially by a single storm event in December 2012 but has subsequently expanded and a large area will need to be cleared to find windfirm boundaries. Pockets of windblow occur through the older stands of trees some due to the felling of adjacent coupes. Some of the older crops are approaching terminal height.

See Map 18

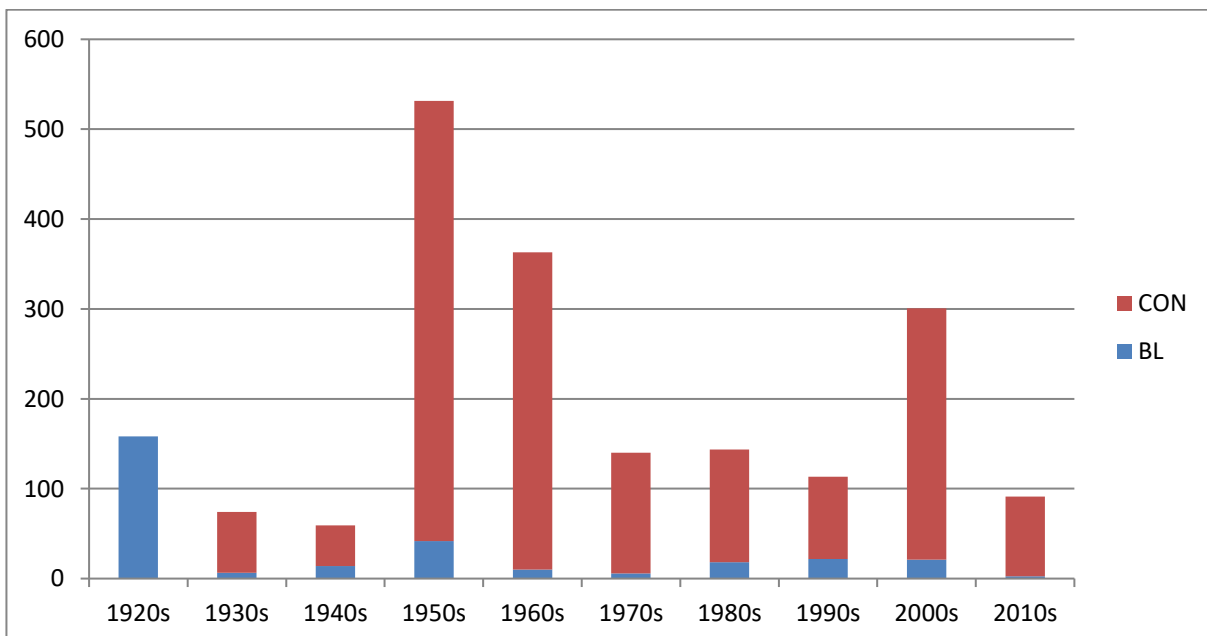
The existing forest

Age structure, species and yield class

The crop data was update for the forest area with an attribute survey in 2014-2016.

The age structure of the current forest is uneven with a large proportion of the forest in the mature and over mature categories. Furthermore these mature stands are not yet restructured with the oldest stands grouped to the west and the mature stands to the north. See Map 19 Current Age Structure

The age structure presents challenges to the even flow of timber, the ability to achieve a fully restructure forest in this rotation due to increasing instability of the older stands and a period of poor habitat for red squirrels before the second rotation stands reaching good coning age.



Graph of Age structure of Leanachan forest

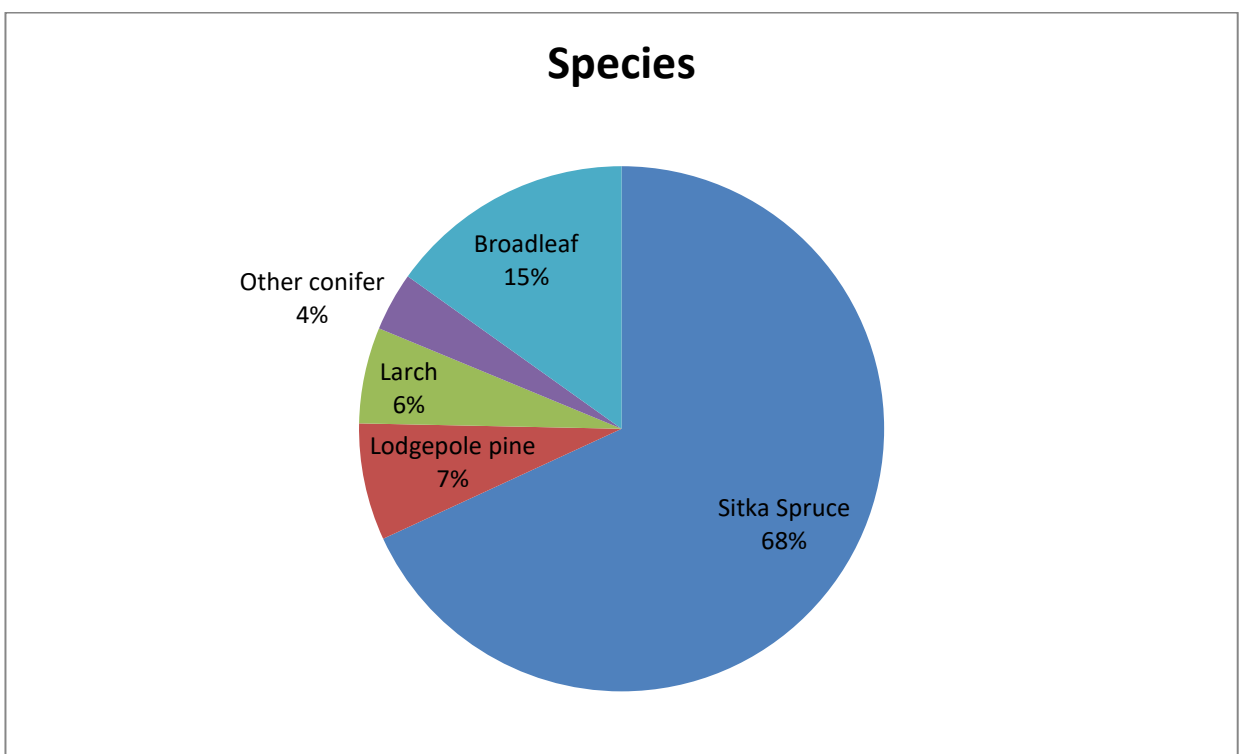
Leanachan species

Sitka spruce is the dominant species in Leanachan forest with 1351ha (68% of the woodland cover). Broadleaves make up 15% of that area with birch by far the most common species recorded (260ha), a high % for this type of forest and associate with the riparian areas and the upper margins.

Lodgepole pine is the most abundant of the other conifer species (143ha) either pure or in mixture. The stands are of variable quality and any future use of Lodgepole pine will be limited to inclusion in mixtures. DNB is present in the forest in some of the LP stands. See Map 20

Larch species comprise 117ha of the woodland cover, mostly in the western part of the forest. P ramorum has been recorded in a single tree on the western edge of the forest. A sanitation felling has been completed. No further larch will be planted until the long term nature of the disease in Scotland is understood.

Noway Spruce (39ha) and Scots pine (23ha) do not make up a significant component of the conifer crop and retention of these stands is important in the medium term for the coning potential.



Species composition of Leanachan Forest

Timber potential

Leanachan Forest is a key softwood timber producing area in the forest district – due to terrain suitable for wheeled harvesting systems, good road access and proximity to markets. The current production forecast is for c22km³/year over the next 10

years of which 84 % is Sitka spruce. Production then declines significantly as the mature crops are felled.

Current production forecast

The plan needs to consider the potential to extend rotations to achieve a more steady flow of timber and also to review increasing the volume available from thinnings. The economics of working the steep slopes will be considered in the preparation of the plan.

A limited amount of conifer thinning has taken place in Leanachan, west of Nevis Range in the vicinity of the Lundy. The majority of the forest is, however, unthinning. The second rotation stands are being assessed on a stand by stand basis as they reach the height for first thinning. Experience to date is that thinning must be undertaken at the correct height as any delay greatly increases the risk of windthrow and reduces the opportunity for later thinning. Currently there is more potential in the east of the forest where the soils are better and where there is higher public use. A small trial of broadleaf thinning has been successfully completed and there is scope for further thinning of broadleaves.

The site conditions across the majority of the forest are favourable for growing a variety of productive conifers as well as Sitka spruce of sawlog grade. Some of the soils to the east are wet and poor nutritionally; the current crops need some further management to improve their performance.

The forest has suffered from windblow despite being relatively sheltered. A storm in 2012 was responsible for considerable damage to mid rotation stands in Chapman wood at the west of the forest. Endemic windblow and damage to exposed edges is increasing as the forest matures and the process of restructuring opens up new areas to the wind.

Leanachan forest is well situated for timber markets with easy access to the A82 for timber processors to the west and the north. The high proportion of spruce in the current crop and accessibility by harvester/forwarder add to the market potential. The BSW sawmill at Kilmallie is less than 10 miles from the forest.

Woodland expansion potential

There is potential for woodland expansion above the current forest timberline as transitional woodland. The FR Niche4Species model identifies the high biodiversity value of the woodland above Coille Leanachan in particular. Careful consideration will be needed in relation to ensure a net environmental gain in the SSSI and in terms of the impact on the landscape. Further expansion in conjunction with neighbours could also be explored.

Pests and diseases

Dothostroma Needle Blight was found in Leanachan in two locations, north of Leanachan farm and in the south west corner of Chapman wood in 2012. Resurveying of the forest in 2019 has shown a spread in extent with only a couple of small areas of more advanced infection.

A single case of Phytophthora ramorum was notified in 2017 and an area of larch cleared in accordance with a SPHN. A national aerial monitoring is undertaken in the spring each year for P ramorum in larch and Dendroctonus micans in spruce. Some of the young SS stands in the lower lying areas to the east are showing signs of slow growth and yellowing needles which may be due to nutrient deficiency or poor drainage. Further investigation is required.

Access

The main forest access for timber haulage currently runs close to the Nevis Range car park and lower gondola station facilities. Neither the Torlundy public road access nor the public road into Leanachan Farm are suitable for HGVs (despite what the Satnav tells continental lorry drivers).

The forest is generally well roaded. The road into Chapman Wood requiring some realignment and a different surface treatment on an unavoidable steep section to make it suitable for haulage. A couple of areas of the forest still needing roading for future timber haulage.

There may also be scope during the plan development to provide other benefits from the road alignments as well as taking measures to minimise the impact on the recreation facilities including noise disturbance.

A strategic timber haul route extends from neighbouring Killiechonate forest through Leanachan to A82.

LISS potential

High quality silviculture which creates attractive woodlands with a lower rate of disturbance will be important in the main visitor zones. The current stands, however, are underthinned and unsuitable for a shelterwood type system. There may be some scope for using small group fellings based on windblow patches and areas of variable growth. This will require forester time to identify which trees to remove, suitable small scale machinery and more intensive management of the regeneration in the high recreation areas. In the transformation period this will be at a net cost. There is also an urgency about this work as the window of opportunity for the current stands is closing.

Along the main access road to Nevis Range and the old road some thinning and respacing of the roadside corridor has created an open and more visually attractive woodland. There is scope for some further work of this nature along other key recreation and access routes.

In the wider forest thinning will be restricted to crops approaching the height of first thinning where the stability and ground conditions are suitable. Crops other than SS need to be given the highest priority.

Agricultural potential

Very few suitable sites for grazing within the forest due to other land use priorities and a lack of infrastructure for management. The principle area is the Decoy field currently used of pony grazing.

Neighbouring Land Use

Leanachan Forest is bordered to the east by Killiechonate forest estate which is also a large scale commercial forest. The plans for Killiechonate will be considered in developing this plan as when view from the Commando memorial and other external viewpoints the forests are seen as a single entity. Killiechonate use the internal forest road network for timber haulage to avoid using the minor public road through Spean Bridge.

To the south the forest borders the highland estate of Liberty British Aluminum, managed on their behalf by Bidwells. The current ideas to increase the cover of native woodland on their estate could link well to FLS desire to see the expansion of the birch woodland above conifer forest in the future. The management of the deer population on the open hill will be a key element to the success of woodland expansion.

Other economic activities

Leanachan Forest makes a significant contribution to the local economy through hosting the recreation facilities around Nevis Range. It is an important venue for significant national and international events including hosting one of the World Championship Events in June bringing hundreds of people to the area for the weekend. The plan needs to take this into account in planning operations as well as improving the appearance of the forest as the backdrop. Further infrastructure may be required.

Leiths manage the lime, sand and quartzite quarry in the forest, leased from FCS. This quarry is due to be expanded to the east in the coming year. Quarry traffic uses the forest access at Nevis Range

River Lochy is the most productive fishing river in Lochaber with Spring and Autumn runs of salmon. River Lundy is one of its main spawning tributaries.

In addition to the hydro infrastructure for the Liberty British Aluminium Smelter, part of the penstock, the powerhouse and export cable the newly constructed hydro scheme by Nevis Range is within the Leanachan forest boundary.

Leanachan farm lies within the forest.

The need for electricity transmission routes impacts on the forest with the Fort to Fort 132kv pylon lines running through the forest. Work is currently underway to increase the resilience of this line through the removal of some trees (already agreed with SSE and approved under a

separate felling licence) and the restringing of the line itself. The currently wayleave is limited to c50m and resilience felling is likely to be a recurring theme as SSE are currently unwilling to increase the size of the corridor. There are a few sections of the line where some landscape improvement to the corridor edges is desirable e.g. where it enters the forest on the northern edge, crosses the access to Nevis Range and along the forest road to the North Face car park.

The West Highland railway line runs close to the northern edge of the forest.

Landscape

Landscape character assessment

Leanachan forest lies across two NatureScot landscape character types . The majority of the forest is within the Broad Forested Strath while the southern edge is in the lower slopes of the Mountain Massif - Lochaber. FLS has identified three Landscape Character Assessment zones for Leanachan.

The Landscape Character Assessments (LCA) help to identify the key features which give the landscape its character and provide guidance on the priorities to protect and enhance these. This guidance will be used in developing the plans for the restructuring and future design of the forest. The transition between the LCA zones will also need careful design, particularly as this is one of most visible areas of the forest from the external viewpoints.

See Map 21 Landscape Character

NatureScot description for landscape type 235: Broad Forested Strath:

- *Broad, low-lying straths with rolling relief and sculptural glacial landforms.*
- *Simple, large scale mosaic of forested ridges, rolling pastures and heather moorland, but dominated by swathes of forestry.*
- *A comparatively densely settled landscape with villages, houses and sporadic commercial development.*
- *Quarries hidden amongst the woodland cover.*
- *Strong communication and service corridors.*
- *Long distance views from surrounding hills over the glens, which are framed by steep glen sides.*
- *Lochs, rivers or canals on glen floor have often been engineered or substantially altered by man.*

NatureScot description for landscape type 233: Mountain Massif - Lochaber:

- *Grey craggy peaks of vast and imposing scale with sweeping concave slopes of steep, smooth rock faces which plummet into glaciated valleys.*
- *Strong visual force created by the slope profile and accentuated by fans of scree and bracken, which draws the eye up and down the slopes.*

- *Typical glacial forms such as aretes and corries within the hills, and moraine and erratics along the glen floors.*
- *Dense patches of coniferous woodland along the base and sides of the glens, often broken by brown plots of clear-felled forest.*
- *Deep rocky clefts within the hillside carved and highlighted by silvery burns and shadows, sometimes packed with birch trees, forming meandering mossy veins on the rock face.*
- *Glens affording a small scale refuge from the vast mountainous masses and often containing roads, footpaths, settlement and picnic areas.*
- *Rivers along the glen floor that are wide and shingly near the mouth, steep and rocky higher up the glen; these are often highlighted by clumps of alder, rowan and birch.*
- *Single track roads, often with dead ends, small bridges and stone dykes, concentrated along the small scale glens; their scale provides a contrast to the experience of the vast scale of the landscape.*

FLS Steep Slopes Zone

Landform:

The zone above the old Puggy Line tramway has North facing, large scale, simple, straight, steep slopes from 200-500m. About 60-70% of the ground slopes are over 35 degrees, with even contours increasing in steepness and rocky outcrops starting at about 400m. This zone forms the transition between the low lying, wet peaty valley floor, and the famous skyline of 'Grey craggy peaks of vast and imposing scale' including Aonach Mor directly above.

Water:

A number of fairly evenly spaced 'steep and rocky' watercourses run N to S straight down the steep slopes. They are generally not incised apart from the larger watercourses of Allt Choille-rais, and Allt Coire an Eoin which runs down the Eastern boundary. There is a concentration of watercourses round Allt-an-t Sneachda to the West of the Gondola.

Landuse:

1930's PAWS Birch woodland extends sporadically up to 550m's, much of it outside the deer fence. 1960's plantation of SS up to 350m's is being replaced by second rotation SS from 2000 onwards in more discreet coupes, with a framework of BLs on the steeper and riparian zones linking to the existing Birch PAWS. Above this is open land which forms part of the Ben Nevis and Glencoe National Scenic Area

Forest roads:

A forest road runs along the base of the steep slope, with all timber coming down to that. There may be some issues with the steepness of the slope for harvesting although previously felled coupes seem to have been harvested successfully. There is a planned road for the slightly less

steep Eastern part of this zone. The shape of final felling coupes may dictate length of road needed.

Infrastructure:

The hydro scheme linked to the aluminium smelting has infrastructure round the watercourses, and affects the volume of water in the watercourses along this face. There is little other infrastructure in this zone

Recreation and visibility:

Most of the recreation occurs West of these steep slopes. However, they are visible from Sgurr Finniosgaig viewpoint above, and the chairlifts. The upper edges of the steep slopes are visible from the Commando Memorial West of Spean Bridge, although this panoramic viewpoint is 5km's away, and also takes in the sweep of the dramatic Nevis massif, which dwarfs the plantations on its lower slopes.

Peaty Plateau zone

Landform:

Simple, large scale low lying strath between 120-150m high forms a 5km long E-W plateau of very flat, wet, peaty land including the SSSI Lon Leanachan, the land round it, and Torr Sonnachain. This transitions gradually into NNW facing contours down to 90m with a gentle slope running towards the A82. On the S of the plateau, contours between 150 to 200m ease into the steep slopes. Further East, the slopes gently drain into the Cour.

Water:

The plateau is very wet and peaty, with a few small lochans, and many water courses draining off it. The watercourses reaching the Cour to the East tend to meander and are not incised, whereas those reaching Allt Achadh na Dalach to the North tend to be straighter and sometimes slightly incised.

Landuse:

This is plantation forest of SS planted mainly 1956 to 1962, with 1930's to 1950's BL's mainly along watercourses. There has been some felling and restocking with SS over the past 10 years, although the yield class is very variable, reflecting the mosaic soils beneath. The Lon Leanachan SSSI provides a large open space in the middle of the forest.

Forest Roads:

Although there is a network of forest roads across this zone, there are areas with no road yet. Planned roads may need to be reviewed depending on the amount of peat.

Infrastructure:

There is little infrastructure within this zone other than two large quarries. General Wades Road runs along the North edge of the forest.

Recreation and visibility:

Due to its flatness, most of this zone is not visible from the busy A82 running just North of it, apart from the edge trees. However, there is a birds eye view of the whole zone from Sgurr Finiosgaig viewpoint, and the gondola. There is one waymarked trail running through this area, but most of the recreation is in the recreation zone.

Recreation Zone

Landform:

This zone is quite complex, medium in scale. The North part has mainly gentle slopes, not as flat or wet as the Low Lying Peaty Strath zone. It is of varying gradient and aspect from 70-100m's with some small summits. The South part rises up with irregular steep slopes from 70-340m's, facing mainly NW, with a couple of small summits screening part of the upper forested slopes. Above the forest, the land rises more steeply still.

Water:

The River Lundy meanders across this zone East-West. There are a few minor watercourses going under the A82 feeding into Allt Achadh na Dalach. Some larger watercourses such as Allt Dain, Allt na Caillich, and Allt a Mhuilinn have cut through the steep slopes and are deeply incised, whilst the smaller watercourses running off the steep slopes tend to run straight down before all joining the incised River Lundy.

Land use:

In terms of forestry, this zone grows a diverse range of high yield class trees, due to its rich, drained soils. It is still mainly SS planted 1980's and 2010's, but with Pine, Larch and BLs interspersed throughout planted 1930's onwards.

This zone is also heavily used for tourism and recreation.

Forest Roads:

The zone looks well served with forest roads, but the River Lundy potentially causes an obstacle, and proposed visitor facilities are also shifting forestry traffic. There is potential for future conflict between recreation and forestry operations in this busy zone.

Infrastructure

The majority of the forests' infrastructure is concentrated in this zone. A minor public road curves South off the A82, towards the Nevis Range ski resort, which has x visitors per year. Tourist infrastructure includes ski lifts, gondola, café, shop, mountain bike trails, hotel, large car

park and proposed lodges. In terms of industry, there are two large quarries, and a multi-use industrial estate.

Recreation and visibility:

Nevis range brings people into the upper reaches of the forest to use the snow sport and mountain bike facilities on offer. Leanachan being on the slopes of the highest mountain in Scotland, also adds to the number of walkers and climbers using the forest. A large number of people are able to have a birds eye view of the forest from the gondola and Sgurr Finiosgaig viewpoint, meaning that any changes such as new facilities or felling may be particularly sensitive in the landscape.

General Wades road runs along the North boundary, and the dismantled Puggy Line tramway runs at the foot of the steeper slopes.

Landscape Guidelines

Identify and conserve contrasts in landscape pattern between large-scale mosaic of moorland and conifer plantations and more diverse, small-scale landscape around the recreation areas.

Enhancing nationally important landscapes

Ben Nevis and Glencoe National Scenic Area

The open land in Leanachan rising towards Sgurr Finniosgaig falls within the Ben Nevis and Glencoe National Scenic Area (NSA), and the rest of Leanachan forms the backdrop .

Leanachans' steep slopes are viewed in conjunction with Ben Nevis, and help set the scale.

The relevant Special Qualities of the Ben Nevis and Glencoe National Scenic Area to Leanachan are:

- *A land of mountain grandeur*
- *A land of classic highland vistas*
- *Human settlement dwarfed by mountain and moorland*
- *The impressive massif of Ben Nevis*

Although only the upper unplanted areas of Leanachan forest are included in the National Scenic Area, the forest does form the lower frame for the Aonach Mor Massif when viewed from across the Glen and from the Commando memorial. The design of the upper margin in particular needs to be sensitive to the landscape. There is scope for developing a more natural transition from forest to open hill.

Internal forest landscape

Enhancing the value of commercial and informal recreation through managing the forest environment is a key objective and driver in the development of Leanachan forest. The current internal landscape around the visitor facilities is variable in quality and needs a plan to manage its future development. There are some good examples such as the landscaping work along the

main access road to Nevis Range in recent years has enhanced the welcome to the forest. A similar project has just been complete to improve the immediate landscape of the MacKenzie Road, the old road to the ski centre and there is opportunity for further work when resources are available.

Within the forest bounds but privately owned is the Lochaber Rural Centre with auction mart and a number of business units as well as space for further expansion. The roadside landscape here is still being developed to soften the impact of the building and associated infrastructure. The present setting of Nevis Range has an Alpine feel with the view framed by spruce and other conifers from the café and the gondola. These stands are however unthinned and will become less attractive internally as they mature further. The challenge is to manage the forest here which is heavily used for recreation all year round.

Visibility

The forest forms the lower frame for the Aonach Mor Massif when viewed from across the Glen and from the Commando memorial. It is also visible from various points between Fort William and Corpach.

A closer perspective is seen from the A82 and the railway. The forest also forms a major part of the view from the Sgurr Fhinniosgaig view point visited by many of the gondola visitors. Views from the East tend to be screened by the neighbouring forest estate of Killiechonate.

View points considered and selected

- View 1 Inverlochy Lodge NN 141 765 Selected
- View 2 A82 layby NN130 762
- View 3 A82 Aldi roundabout NN 120 750
- View 4 Commando memorial NN 207 824 Selected
- View 5 Banavie road NN 112 768 Selected
- View 6 Sgurr Fhinniosgaig NN 188 762 Selected

See Map 21 Landscape character assessment and viewpoints

Environmental designations

Special Site of Scientific Interest (SSSI), SAC, SPA

SSSI/SAC

See Map 8 Statutory Designated sites

FLS manages a small proportion of the Beinn Nebhis SSSI and SAC on the upper margin of the forest. The priority for management is to prevent further decline of the woodland and to promote its recovery. This requires a reduction in browsing pressure. There is also an opportunity to enhance the woodland through the expansion and linking of the current remnants in the transition zone between the forest and the open hill.

Lon Leanachain SSSI lies entirely within the forest. The priority is to remove the conifers on the bog areas that are hydrologically connected to the designated site and to create a buffer to reduce the level of natural regeneration of conifer species. The buffer should be focused on the western side of the designated site (prevailing wind and other peat areas) and can include site suitable native trees.

The Parallel Roads of Lochaber SSSI is a geological SSSI covering a large area around Spean Bridge and Glen Roy. The key geological features within the SSSI have been identified and mapped. See Map 12. Forestry can continue as a land use on the SSSI but any activities involving ground disturbance will need to check for the presence of any of the key features before proceeding and avoid damaging them.

The LMP will incorporate the revision of the SSSI management plans for both areas to protect and enhance the designated area along with the necessary consents from NatureScot for operations that may impact on the condition of the site.

River basin management plan

SEPA Flood maps indicate that Leanachan forest may offer opportunities for natural flood management through floodplain storage and runoff reduction. The management of the forest will need to take this into account in the felling and restocking proposals. This aspect currently has a lower priority at a regional level than the coastal defences.

All the waterbodies for which there are separate data sheets have good ecological potential with the exception of the river Lundy and the Allt a Mhuilinn. See below.

Continuing to maintain the good ecological condition and improving the riparian areas of all the water bodies will be the main actions for FCS in Leanachan forest.

River Lundy – poor ecological potential

The pressures on the river are from the abstraction of water for the aluminium smelter hydroelectricity generation scheme and the associated changes in natural flow conditions, in particular the baseline flow regime downstream of the abstraction. Morphological alterations associated with the weirs and dams is impacting on the fish passage

Allt a Mhuilinn – bad ecological potential

This burn lies just to the west of the forest part of which is its catchment. The pressures on the watercourse arise from the abstraction of water associated with the aluminium smelter, as for the Lundy, and also from the whisky distillery at the lower reaches.

Target for both rivers is to achieve good ecological condition by 2027.

Archaeology: Scheduled Monuments / Unscheduled

The forest name is derived from the name of the farm which made up the principle land purchase for the forest development. Leanachan means the little meadow or possibly swamp. There is one designated heritage site, Leanachan Motte. The monument consists of the remains of an earthen mound, c. 30m in diameter and c. 2.5m in height. The mound is partially enclosed by an earthen bank c. 0.6m in height. The scheduled area to be is 60m in diameter. This monument is of national importance because it is a well preserved example of a small motte in an area not renowned for this type of defensive structure. Although partially damaged, the monument still has the potential to add to the knowledge of medieval society and defences in the Highlands. The waterlogged conditions of the site is significant since archaeological remains, especially organic materials, may be far better preserved here than at other comparable sites.

The oldest known man-made feature in Leanachan is a cup marked stone. The site of a C15th battle lies at Tom na Brataich. Most of the archaeological sites within the forest are associated with its former agricultural land use remains of corn kilns, buildings and fanks associated with the township at Craig Aoil and settlements around the present day Leanachan farm and at Tomnafet. The route of Wade's military road runs along the northern edge of the forest. There are various historical and current artefacts associated with the construction of the British Aluminium smelter including the old Puggy Line, the adits and hydro pipe line and the wartime decoy site. The Puggy line is a popular cycling and walking route and has been adapted over the years for this purpose. Remnants and artefacts of the original line are becoming scarce and should be retained wherever possible.

Habitats

Woodland habitat

A significant remnant of upland birch woodland remains above the commercial tree line on the slopes of the mountain area and within the SSSI and SAC. The remaining trees are generally veterans with a number of phoenix trees. Advanced natural regeneration is present but being held back by grazing pressure both within the stock fence area and, even more so, out with the fence where sheep trespass as well as deer impact the trees. The birch woodland occurs in two main fragments separated by open ground. Linking these two patches together would bring ecological benefit. In addition, the conifer woodland below the birch is a former native woodland (PAWS) called Coille Leanachain on the pre-afforestation maps. As the conifer is felled this area is being restored by natural regeneration, offering a significant expansion of the native woodland lower down the hill. There is an option in this area to establish some native Scots pine from Glen Nevis seed and sessile oak (but see red squirrel conservation below). Expansion onto the open hill is also a possibility but this is subject to protecting any of the open habitat features of the SSSI. Further to the east the crags beneath Sgurr Finniosgaig may hold potential for montane willow given the underlying more base rich geology. From here around beneath Meall a Coille

Moire removal of some of the conifer from the PAWS site has been undertaken. The seed source here is poorer. The PAWS was assessed as having low ecological potential for restoration so some of the planted Scots pine has been retained with a vision of a mixed native woodland in the future. There is also scope for restoring and building on the remnants and linking them to developing riparian corridors. The challenge is to manage the grazing pressure to allow the natural regeneration to establish.

Analysis of the Native Woodlands of Scotland Survey data using Forest Research Niches4Species model biodiversity shows the biodiversity value of the existing corridors of native woodlands. These can be built on in the plan. Further work is needed to make sure the riparian areas for the Cour and the River Lundy are robust. The water courses of Leanachan forest are all heavily modified as a result of the original British Aluminum hydro scheme which abstracted all the water from the burns coming off the high ground above the forest. Nevertheless the plan will seek to improve the quality of the water and of the riparian network below the adits.

There are a small number of juniper plants recorded in the forest (Allt na Caillidh).

A small pocket of ASNW has survived near the old settlement of Tomnafet adjacent to a stand of mixed conifers. The European protected green shield moss (*Buxaunia viridis*) has been found at this location.

See Map 13 Ecological Issues and Analysis

Open habitat and peatland

A survey of the open habitats within Leanachan Forest has been carried out. See Map The open habitats of Leanachan forest are associated with the upper margins of the forest and part of the much larger Beinn Nebheis SSSI (9,539ha) and SAC (9,316ha). The priority for the SSSI is to maintain any designated features/habitats in favourable condition. A reduce the grazing pressure will be a key element in achieving this. See above for possible woodland expansion.

Lon Leanachain SSSI is a major feature of the forest area and the LMP will incorporate the revision of the SSSI management plan to protect and enhance the designated area along with the necessary consents from NatureScot for operations that may impact on the condition of the mire. Consideration of activities out with the SSSI which may alter its nutrient status and/or hydrology will be included. The boundary of the bog needs to be agreed along with a buffer zone. The bog has recently been cleared of invasive non-native trees and the scope to reduce further incursions through a buffer zone will be considered. There are other areas of deep peat that will require further assessment on their potential for restoration or tree growth. These areas also have the potential to contribute to the storage of carbon.

The Allt an Loin that flows from Lon Leanachain has a number of important mosaic habitats of wet heath, fen, reedbeds and developing wet woodland. Opportunities to incorporate these into the wider riparian corridor will be taken.

Species

Deer populations are currently medium for the forest as a whole. However, the recent SSSI assessment of Lon Leanachain found the impact on the bog to be high. The upper deer fence is no longer tight and the plan will need to consider the future of the fence for re-establishment of the PAWS areas and the upper treeline wood development.

Leanachan forest, along with part of Killiechonate estate is designed as a red squirrel strong hold in 2010 with a carrying capacity, at the time, of 205-396 individuals. The current population is at the lower end of this range. The threat from grey squirrels is currently low. The current forest species and structure is suitable for red squirrels although the proportion of other conifers is low. The present levels of mature Sitka spruce are sufficient to overcome the lack of other species. However, projecting forward the structure of the forest is becoming significantly poorer as the current seed bearing trees are felled and restructuring of the forest increases the fragmentation of the mature stands. In addition the proportion of Sitka spruce in the stands currently less than 30 years old is too high to provide a sufficient food source to sustain the population in the future.

There is an urgent need to increase the diversity of conifer species that will provide a sustainable food source as well as mature trees for habitat and to maintain linkage between suitable habitats to improve the suitability of the forest for red squirrel.

Leanachan forest lies between two black grouse strong hold areas at Roy Bridge/Spean Bridge and Glen Nevis/Cow Hill. There is potential for improving the habitat for black grouse on the upper margin with transient use of restock areas.

A barn owl nest box scheme has been in place in Leanachan for the past couple of years.

The area beneath the 132kv pylon line and close to the railway is known for its chequered skipper and pearl bordered fritillary. Part of the area is monitored through a National Butterfly Transect. The chequered skipper also occurs in the wet birch woodlands of the Cour and a second National Butterfly Transect runs west from the river along forest roads and rides.

Areas where biodiversity is a high priority will be identified through the LMP process and become part of a permanent framework for the forest design.

Invasive non natives

Currently Leanachan is a low priority for the treatment of Rhododendron with only scattered bushes in the forest. FLS will continue to monitor Rhododendron and for other invasive plant species. Monitor the impact of feral pigs, known to be in Killiechonate to the east, on the various habitats of Leanachan.

Social factors

Recreation & Community Recreation

See Map 9 Recreation issues and analysis

Leanachan forest is a major recreation facility close to Fort William with access to the Nevis Range gondola, cycling and walking trails.

Leanachan Forest is well established as a destination for outdoor recreation. Much of the recreation opportunity is focused around the gondola base station of Nevis Range, mountain bike and ski centre, which attracts some 130k visitors per year. A High Wire course adds to the visitor activities at the base station.

The North Face car park at Torlundy is popular as the start point for expeditions to Ben Nevis' North Face and for walking away from the main mountain bike area. Like the Torlundy access, a small car park at the end of the public road to Leanachan farm is used by people looking for a quieter walk or ride in the forest.

Rights of way, core path, the old Puggy Line and the East Highland Way all traverse the forest providing opportunity for longer walks and rides.

The East Highland Way from Fort William to Aviemore passes through Leanachan from the Puggy Line via the North Face car park access down to the Fire Road by the railway and on to Spean Bridge.

In the wider forest the Puggy Line forms part of a circular route around the forest as well as connecting the forest to the wider route from the smelter to the reservoirs at Laggan and Treig.

Rights of way and core paths also cross the forest, mainly following the forest road network and linking to the older settlements of Leanachan and Tomnafet.

A visitor survey was undertaken in the summer of 2016 by Louise Sing of Forest Research to identify the areas used by visitors, their preferences and the values they place on the forest. The woodland lying between Nevis Range and the North Face car park is the most heavily used and popular area for visitors. The linear routes however, also feature strongly: the Puggy line, the East Highland Way, the North Face access path and the forest roads east of Nevis Range.

The importance of Leanachan Forest for recreation has led to the development, with Highland and Islands Enterprise and the Highland Council, of a Masterplan for the "resort". This identifies the potential for a range of accommodation from basic wooden pods to chalets and a hotel in an area of woodland to the north and west of the present Nevis Range. Detailed work is underway initially to finalise the site for the cabin development and to prepare plans for a formal planning application. This is being followed by preparing to offer further accommodation development opportunities.

There is potential conflict between forest operations and increasing recreational activity and ways to help mitigate this through forest design will be a key objective of the LMP development as well as opportunity to enhance the visitor experience.

Community

The forest lies within the Fort William, Inverlochy and Torlundy Community Council and Spean Bridge, Roy Bridge and Achnacarry Community Council areas. Leanachan Farm is a privately owned property within the forest and has a private water supply. There are also private houses adjacent to the forest at Torlundy.

Research opportunity

The development of the LMP has coincided with work by Louise Sing of Forest Research on Ecosystem services delivery using Leanachan Forest as a case study.

“The research will compare the provision of ecosystem services under alternative climate change and forest management scenarios for the case study forests, starting with Leanachan forest. It will explore how different species and forest management options, which are suited to different socio-economic futures, affect the delivery of a range of ecosystem services including timber, carbon, biodiversity, cultural services including recreation, identifying the synergies and trade-offs between different goods and services.

Scenario modelling provides the opportunity to test the effect of management decisions on ecosystem service delivery for a range of different exploratory socio-economic and climate scenarios.”

The results and ongoing discussion with FR will be used to inform the development of the plan.