Cheviots Forest Plan 2016

Forestry Commission England

North England Forest District

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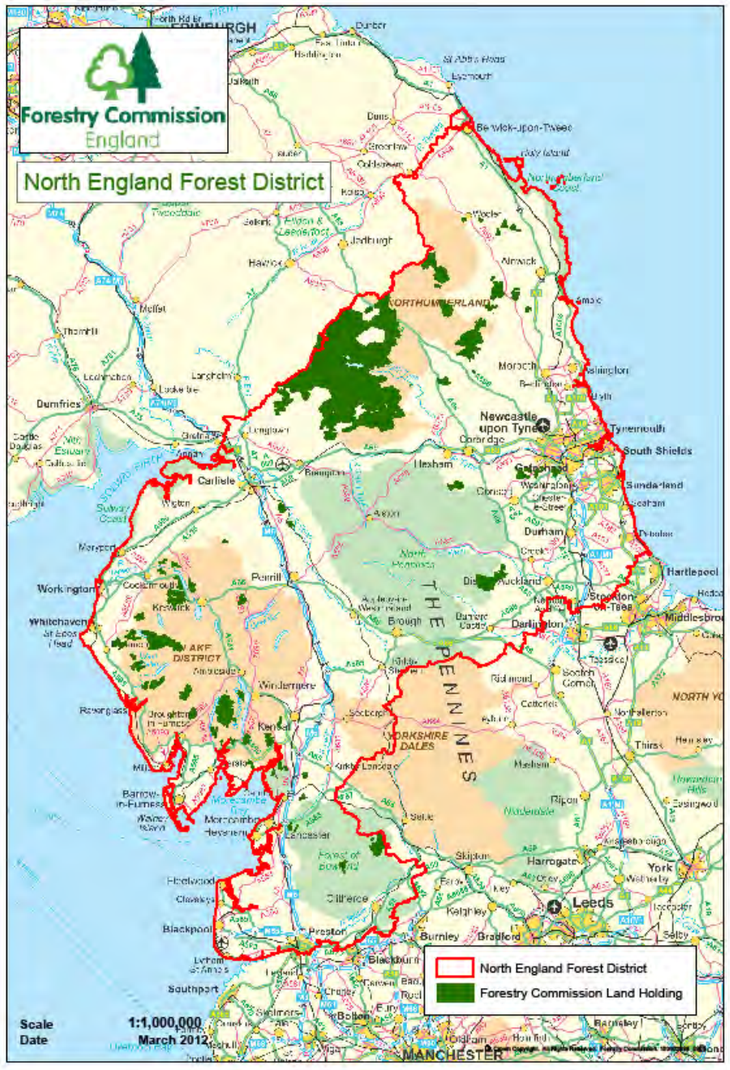
FSC www.fsc.org FSC® C123214 The mark of responsible forestry

PEFC Promoting Sustainable Forest Management www.pefc.org

Planning and District Context

The Strategic Plan for the Public Forest Estate in England outlines the delivery of forest policy at a national level. At a regional level there are six Forest Districts covering the country that directly oversee the implementation of policy actions in local public forest estate woodlands. Forest Enterprise England is the organisation responsible for managing the English public forest estate.

North England Forest District (NEFD) is the management unit that manages the public forest estate in Northern England. This is an extensive area encompassing 9 county or unitary authority areas from the Scottish border to Durham and Lancashire.



Our task is to realise the potential of each of the forests in our care for sustainable business opportunities, wildlife and nature conservation, and the enjoyment and well-being of local people and visitors. Each of our forests supports the economy through local jobs, sustainable timber production and the provision of recreation and tourism opportunities. All are funded by revenue from timber sales and recreation provision.

The woodlands of the district are currently arranged in 62 management areas, and their management is covered by individual ten year forest plans that identify local issues and the broad silvicultural management of the woods. Forest Plans are reviewed every five years.

These plans and their associated forest operations ensure that produce from the woodlands is endorsed by the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) as being produced from woodlands under good management that meet the requirements of the UK Woodland Assurance Scheme (UKWAS) and the UK Forest Standard (UKFS).

Individual Forest Plans aim to deliver a range of public benefits with achievable objectives that deliver the three drivers of sustainable land management outlined in the North England Forest District Strategy.

These key drivers are supported by the following Forest District Policy;

- we will optimise the financial return from timber production compatible with achievement of other forest district objectives while complying with the UK Forestry Standard and meeting the requirements of the UK Woodland Assurance Scheme
- we will provide public access to all our forests and woodlands where there are no legal or safety restrictions. We will encourage and permit a wide range of recreational activities from walking and quiet enjoyment to more specialised activities including orienteering, horse riding and motor sports.
- we will ensure that rare and threatened habitats are protected and managed to maintain or enhance their conservation value

The Cheviots Forest Plan

The Cheviots Forest Plan combines the first submission for Uswayford Forest and the third revision for Kidland Forest which was due in 2017. They are submitted as one plan to combine Red Squirrel Reserve management and operational objectives.

Part 1 Background Information

Introduction

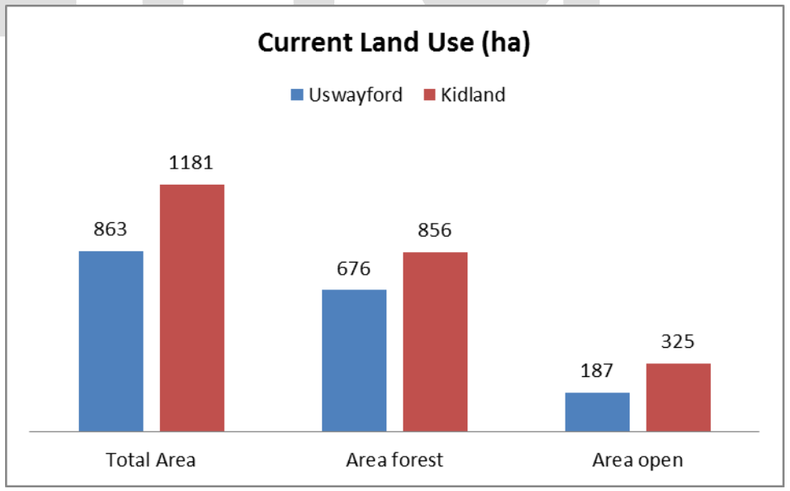
Uswayford and Kidland Forests are located within the Cheviot Hills north of the village of Alwinton within the Northumberland National Park (see Location map in Part 5).

Uswayford was acquired by the Forestry Commission in two parts; Hebden Burn in 1954 and later the remaining area of Uswayford in 1970. The forest extends to 862ha of which 611ha is managed as productive conifer plantation. The most common species is Sitka spruce planted in the period between 1975 and the early 1980's. The forest is approaching economic maturity. The forest, which is a red squirrel reserve, provides important habitat for red squirrels and is significant due to the close proximity to the neighbouring red squirrel reserve at Kidland Forest which has implications for the choice of harvesting and restocking regime.

Kidland Forest occupies approximately 2100ha of which 1181ha is managed by Forest Enterprise, the majority of the remainder being in a number of private ownerships managed by Tilhill. The forest comprises a mixture of spruce, pine and larch with Sitka spruce dominant which reflects the primary aim of the initial planting to produce a timber resource. The previous forest plan approved in 2002 and subsequently revised in 2007 adopted the accepted principles of managing the forest as a red squirrel reserve. This includes delayed clearfelling, inclusion of early small seeding species and introduction of greater conifer species diversity at restocking and the exclusion of large seeded broadleaf species.

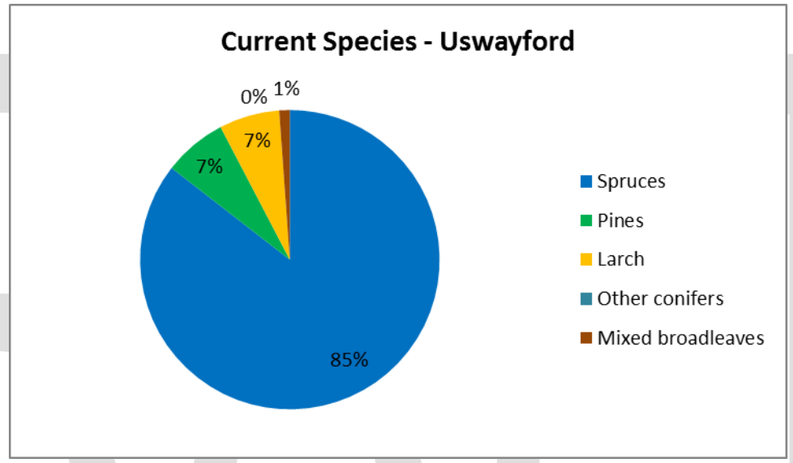
Current Woodland composition

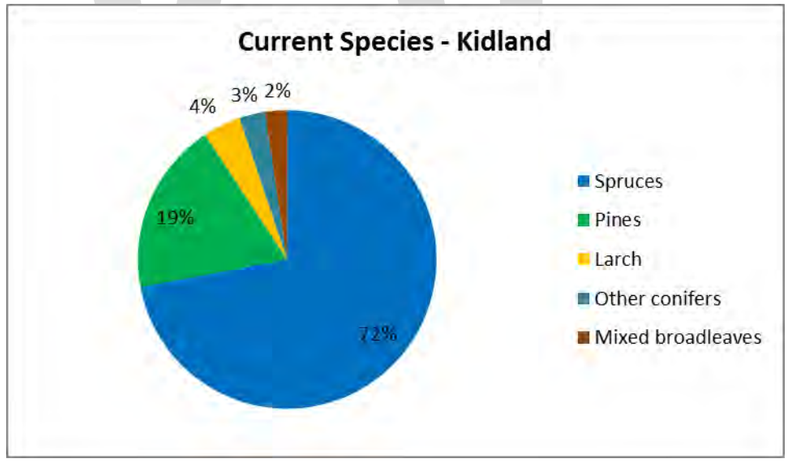
Of the combined total area 1532ha is afforested (including buildings and unproductive area) and 512ha permanent open land (including agricultural let in Kidland) which exceeds the minimum requirement for open space in the United Kingdom Forest Standard (UKFS). In Uswayford much of the open area around the upper margin is existing open habitat that was not afforested.

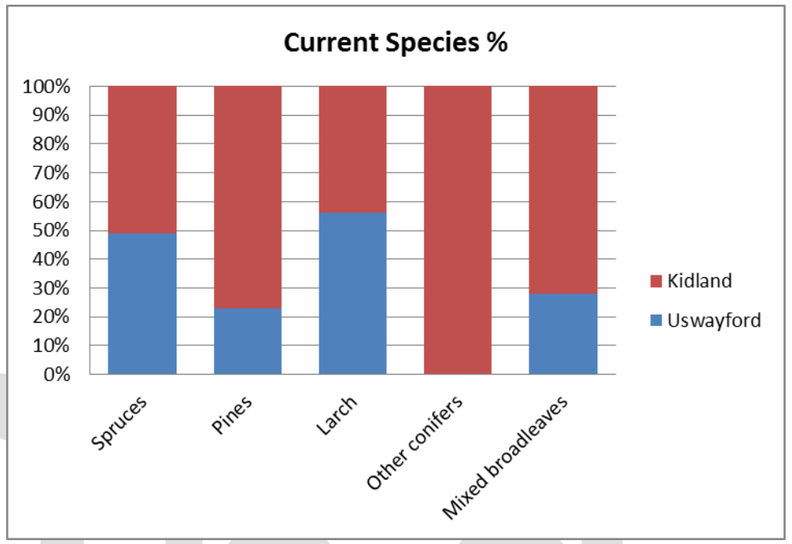


Species

The current species composition is mostly pure conifer which reflects the initial primary aim to produce an economic timber resource. In Uswayford Sitka spruce dominates with a mixture of larch and lodgepole pine. The small amount of broadleaved cover is limited to the valleys. Whilst Sitka spruce remains the dominant component in Kidland there is greater species diversity resulting from achievements from the previous plan to increase species diversity through establishment of pines and other conifers.

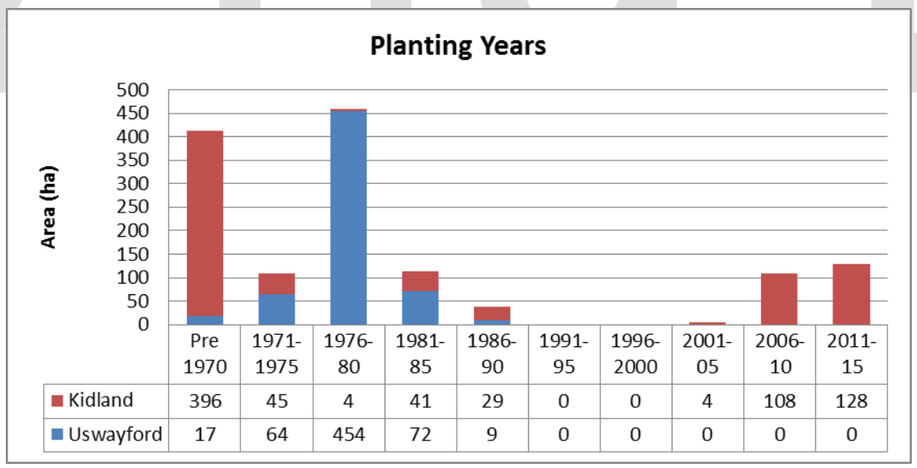






Age class

Uswayford was planted predominantly through the 1970's and there has been no felling of the initial planted crop which is now approaching economic maturity. In contrast, restructuring in Kidland has been underway since 2000 which reflects the more mature nature of the forest.



	Pre 1970	1971-1975	1976-80	1981-85	1986-90	1991-95	1996-2000	2001-05	2006-10	2011-15
Kidland	396	45	4	41	29	0	0	4	108	128
Uswayford	17	64	454	72	9	0	0	0	0	0

Designated areas

Uswayford and Kidland Forests are designated as Red Squirrel Reserves and are located wholly within the Northumberland National Park. Both of the forests lie within the catchment of the River Coquet and its tributaries with the River Alwin, which is part of the River Coquet and Coquet Valley Woodlands SSSI, flowing from Kidland Forest. There is a Local Wildlife Site on the connecting area of adjacent private land east of Uswayford and north of Kidland which extends into FC landholding. The area comprises an upland habitat containing characteristic vegetation associated with habitats at an altitude above the level to which farmland has been enclosed into fields. Local Wildlife Sites are defined as discrete areas of land considered being of significance for nature conservation at a county context and although not legally protected they are a material consideration for the planning authority.

Topography and Soils

The altitude over the sites varies from 210m entering Kidland forest along the Alwin valley to over 600m above sea level on the hill tops. Kidland is dominated by a series of steep valleys with rounded ridges and hilltops whereas Uswayford is more characteristic of the gentler rolling landform of the Cheviots. Soil types vary with altitude with skeletal soils generally dominating the steep valley sides and gleyed/peaty soils covering the upper plateaus.

Modelled Detailed Aspect Method Scores (DAMS) indicate the windiness across the sites (see DAMS map Part 5). DAMS are calculated from tatter flag observations, elevation, aspect, topographical exposure, valley shape and direction and reflect the variation in site type and soils. Crop stability varies significantly with lower windiness scores being dominant in the valley bottom and sides. Less stable sites associated with windiness scores above 15 dominate the upper plateau areas in Kidland and most of Uswayford. This has a major impact on the ability to retain crops in these locations as rotation length will be limited by the likely onset of wind throw and opportunities for thinning are limited.

Landscape

The European Landscape Convention (March 2004) is aimed at the protection, management and planning of all landscapes, and includes a requirement to assess landscapes, and to integrate landscape into regional planning policies.

National character areas (NCA) are broad, well-established and generally recognisable geographic areas. At a more local level Landscape Character Type (LCT) is the distinct, recognisable and consistent pattern of elements that makes one area of landscape different from another.

Kidland and Uswayford are classified in the Cheviot Rounded Hills LCT (Northumberland National Park Authority Landscape Supplementary Planning Document 2011).

Key characteristics of significance to the plan for the Cheviots include;

- Cluster of smooth, domed hills forming a distinctive skyline; extensive rolling plateau
- Visually simple landscape due to topography and uniform landscape
- Little or no tree cover except where there are blocks of coniferous plantation
- Numerous relict pre-historic landscapes; drove routes
- Strong sense of wilderness derived from simplicity, openness

Guidelines for development include:

- To avoid visual intrusion on the skyline woodland planting should be associated with burnsides and watercourses and avoid symmetry of shape
- Timber extraction operation and extraction routes should be sympathetic to the landscape

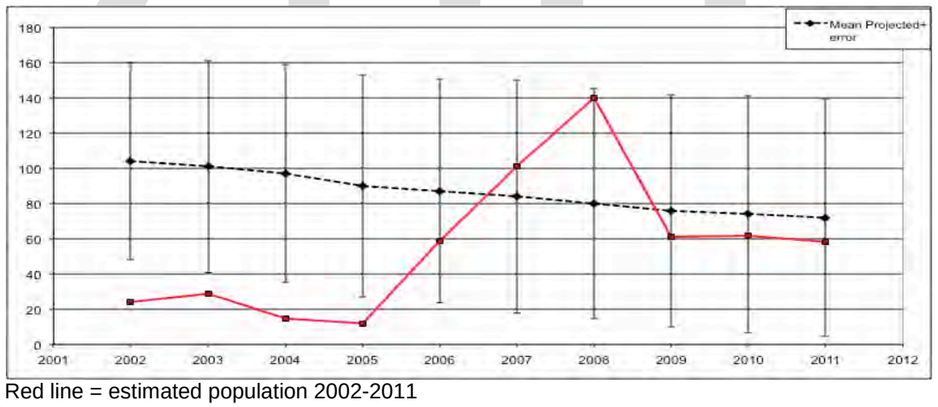
Biodiversity

Conservation interest in Kidland has been enhanced through forest restructuring. This has been achieved through forest planning, felling and restocking and open space management throughout the period of the previous plan and a variety of species of fauna and flora are represented in the forest. Notable species include Moschatel (Adoxa moschatellina), Smooth stalked sedge (Carex laevigata), Alpine clubmoss (Diphasiastrum alpinum), Wood vetch (Vicia sylvatica) and Peltigera Britannica. Despite the lack of forest restructuring localised conservation value in Uswayford is good. An ecological survey in 2015 identified 16 sites of conservation interest mainly associated with open ground along watercourses, the forest road and along the forest boundary. The lushness and vigour of grassland and blanket bog vegetation reflects the fact that the land has been enclosed for some 45 years and received little or no grazing. Survey results and species lists are available in the report.

There is also significant interest and potential in the management of species associated to habitats as a whole rather than at any specific location, notably red squirrels and fresh water habitat species.

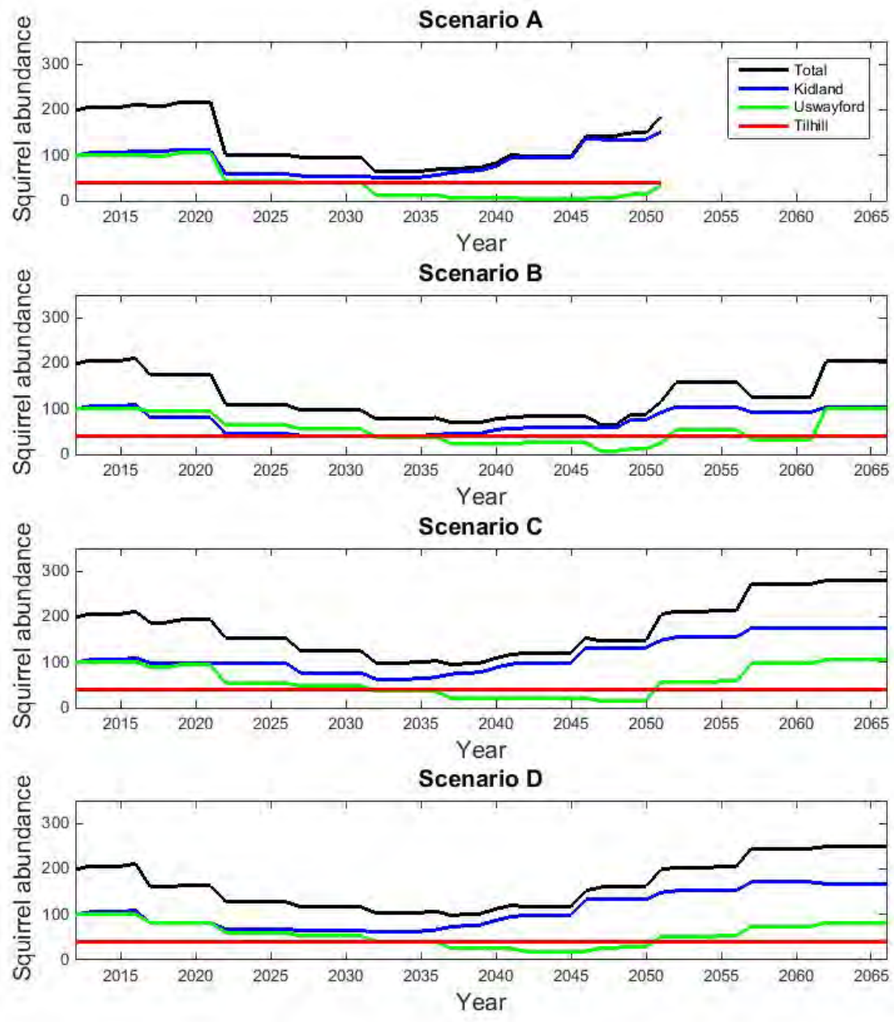
<u>Red Squirrels</u>

Kidland and Uswayford have been included in the suite of England Red Squirrel Reserves since 2001 due principally to their isolation, prevalence of small seeded tree species and lack of grey squirrels. The approved objectives for Kidland through the period of the last two plan revisions have focused on long term viability and management of the forest for this species. Studies by Newcastle University and Queen Mary College, London have estimated populations in Kidland since 2001 based on theoretical carrying capacity related to cone density (food supply). Annual monitoring over the last 14 years (measuring annual variations in coning) indicates a theoretical capacity of between 60-80 squirrels on the FC managed area of Kidland. The actual population varies widely in response to annual food supply and based on densities of cones stripped by squirrels in autumn 2013, which was a poor seed year, the present population is estimated in the range 10-23. The population is estimated to be higher than this in Uswayford based on the results of an extended monitoring area in 2015.



Red line = estimated population 2002-2011

Previous studies in Kidland excluded the contribution of Uswayford which had not yet reached seeding potential. In 2014 a combined study in partnership between FC and Heriot Watt University in Edinburgh was initiated with the aim to produce a mathematical modelling assessment of the combined population in Kidland and Uswayford. This would influence future management in Kidland and provide a basis to assess the impact of different felling and restocking scenarios in Uswayford especially as population viability is dependent on forest habitat rather than external recruitment. Several design plan scenarios (combining Uswayford and Kidland) were modelled and the felling and restocking proposals outlined in this plan represent the optimum in terms of silviculture and red squirrel viability.



(Source: Heriot Watt University – A Modelling Assessment of the population dynamics of red squirrels in the Kidland and Uswayford forest, Northumbria, in relation to proposed forest design plans).
Note: baseline data used for area managed by UPM Tilhill.

Freshwater habitat, species and protection

Both of the forests lie within the catchment of the River Coquet and its tributaries with the River Alwin, which is part of the River Coquet and Coquet Valley Woodlands SSSI, flowing from Kidland Forest. Overall this sub-catchment is classified by the Environment Agency (2014) as “Good” (i.e. achieving good ecological and chemical condition) with parts of the sub-catchment classified as “High” making it one of very few such areas in England & Wales. The River Coquet and Coquet Valley Woodlands SSSI is notified for its relatively unmodified, fast flowing, nutrient poor upland river which supports characteristic fauna and flora and associated ancient woodlands. The Coquet is an important salmonid fishery and salmon is a notified interest feature of the SSSI along with two species of lamprey. The otter, which is also a notified interest feature, is widespread throughout the system. Salmon are known to spawn in both the River Alwin, which drains the Kidland Forest catchment, and the Usway Burn, which drains the Uswayford Forest Catchment. Salmon require clean, nutrient poor water for their survival. Sedimentation of water courses can result in both increased nutrient levels and smothering of the clean gravels that salmon, lamprey, and sea trout require for spawning.

The risk of sediment releases occurring during forestry operations is mitigated through strict adherence to the UKFS Forest and Water Guidelines which is the recognised industry standard. Since the commencement of harvesting and restocking in Kidland over the last 14 years there have been no instances of diffuse population originating from forest operations. There have been no forest operations in Uswayford since the forest was established. However, there is some deep erosion of original forest drains in the south east part of the forest associated with high rainfall events. Although significant erosion has occurred the downstream impact has been minimal due to the natural floodplain function of the main watercourse through this part of the forest. Mitigation will be possible during the early phase of harvesting in the period 2017-2021 by filling the scoured drains with woody debris (conifer stems and branch wood) and implementation of an appropriate drainage plan. In addition to the Forest and Water Guidelines all new roads and road maintenance adheres to Forest Civil Engineering (FCE) best practice which is recognised as the industry standard both within the public and private sector.

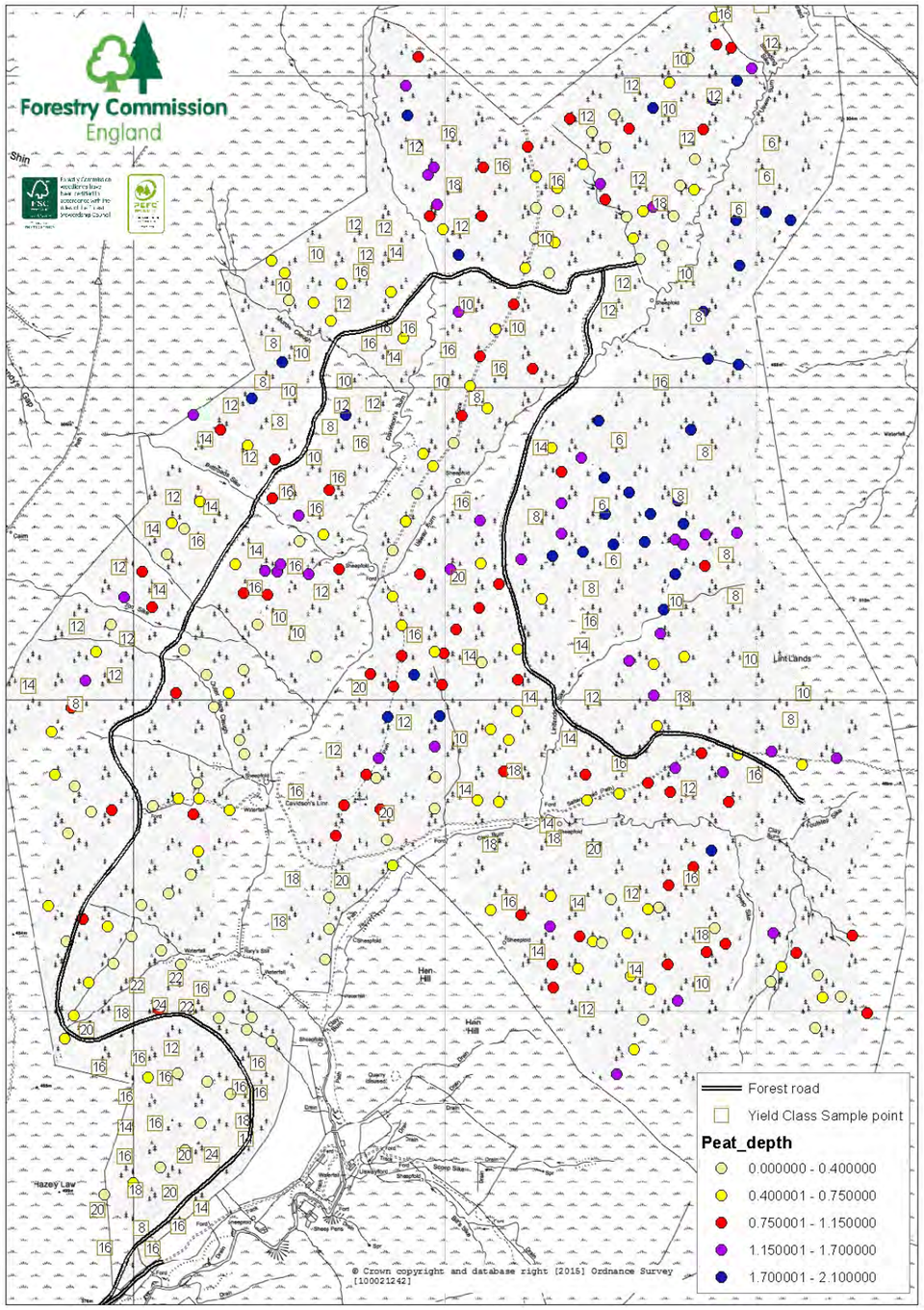
Upper forest edge and Black Grouse habitat

Black grouse have severely declined in North West Northumberland (north of the A69), in recent years with numbers declining from 61 males in 1998 to just two in 2014 (Source: Game and Wildlife Conservation Trust). Prior to this catastrophic population collapse black grouse were present on the Otterburn training area and the adjacent Cheviot Hills. A HLF funded landscape scale project in 2004 to link black grouse between these two areas identified Uswayford as a formerly occupied site. Re-colonisation of the Cheviot Hills, either by translocation of wild birds or by captive bred birds’ is still considered a future conservation aspiration. Continued habitat restoration in the Cheviots and Otterburn area is critical and the felling and restructuring of Uswayford provides an opportunity to contribute to future potential to connect habitats between these areas. Developing a more open, low density woodland fringe on the upper margins of Uswayford and Kidland will create forest edge habitat suitable for a range of species including black grouse, and contribute to landscape enhancement of the upper forest edge. Definition of ‘open woodland’ is given in Appendix 1 in Part 3 Objectives and Proposals.

Soils, vegetation and carbon

The soils in Kidland and Uswayford vary from peat generally on the flatter plateau areas to surface and peaty water gleys, rankers and upland brown earths. As the soil mapping available in Uswayford is not of sufficient accuracy for more localised planning a soil survey, commissioned by Forest Enterprise in May 2016, identified the depth of peat soils at randomly located points throughout the forest. Although overall the average growth rate of the crop is good (as indicated by a Yield Class survey in 2015) the results indicate that the lower yield class crops (in the range 6 to 8) appear to be associated with a limited area of deeper peat which could provide potential for restoration to mixed habitats of a more open sporadic tree cover. This is indicated on Map 1 below. Vegetation associated to these sample points indicated the presence of species representative of those on the adjacent undesignated open moorland and no species of significant interest associated to active blanket bog habitat were recorded. Anecdotal evidence suggests that most areas of deepest peat outside the forest margin were not afforested and should therefore remain as permanent open habitat. Carbon budget results (assessed in 2016) indicate that a long term sustainably managed forest is more effective at sequestrating carbon than that of the overlying peat soils.

Map 1 Yield Class and Peat depth correlation



Historic Environment

Historic Landscape

The rounded hills of the Cheviots are composed of a suite of igneous rocks of Devonian age. About 380 million years ago, the area which was to become the Cheviot Hills was occupied by a volcanic centre. Lavas, mainly andesite, and volcanic sediments erupted from this complex to form the Cheviot Hills we see today. These volcanic rocks have weathered to form rounded hills with many subsequent typical glacial and post-glacial features.

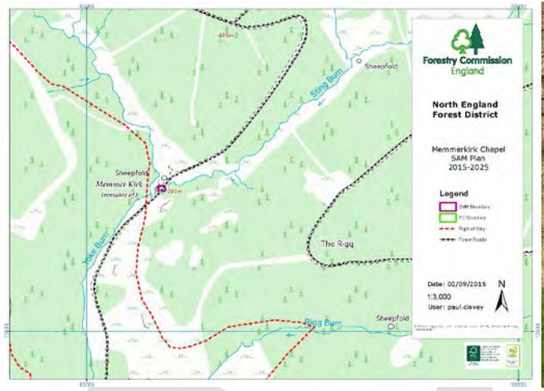
The area has a long history from ancient man through countless generations of ancestors who lived and worked in these hills with examples of bronze-age settlements, field systems and cairns such as at Windy Gyle, and remains of iron-age palisaded settlements and hill forts found on the summits of many Cheviot Hills. Direct Roman influence appears to be absent from most of the area, with the exception of nearby Dere Street and its associated camps such as Chew Green although many Romano-British homesteads exist throughout the area. The surviving remains from the medieval period, including deserted villages, extensive field systems, shielings and enclosures, suggest a period of greater population and farming diversity prior to the 14th century. Being close to the Scottish border, this was ' frontier land' and centuries of Royal wars between English and Scots and lawless feuding by the 'Border Reivers' contributed to an unstable and lawless region which drove people from the area.

The Cheviots are crossed by a number of ancient tracks and drove roads which, for centuries, were busy with herds of livestock being driven from Scotland to markets in the south. Although traffic eased during the period of medieval border warfare, these routes were re-established in the 17th century, particularly by drovers keen to avoid the tolls of the new turnpike roads. 'Clennell Street' was the route taken by Scottish cattlemen who would drive their stock over the Border Ridge and Windy Gyle down into Alwinton, to English markets. These tracks now form part of a network used by walkers in the Northumberland National Park. The Union of the Crowns in 1603 led to more settled conditions and from the late 17th century onwards large-scale commercial sheep farming began to emerge. In the 19th century management for grouse shooting joined livestock grazing in influencing the extensive tracts of moorland and extensive grazing today retains the open moorland landscape. The 20th-century planting of significant conifer blocks and geometric shelterbelts had a dramatic impact on the landscape but this is now being reduced by more sympathetic rotation plans and the large-scale restructuring of forests as land management objectives shift towards the delivery of a wider range of ecosystem services.

Scheduled features

One Scheduled Ancient Monument (SAM) is present within Kidland named Memmerkirk Chapel (SMR Ref: ND391) which are the remains of a chapel dating from the 14th to 17th century. This site is well documented and covered by a management plan previously agreed with English Heritage. There are no SAM's within Uswayford Forest.

Memmerkirk Chapel is situated in the fork of the confluence of the Sting Burn and the Yoke Burn on an area of raised ground and is thought to have been a chapel for the 14-17 century shielings although there is little evidence to substantiate its existence until 1650. Although there are long traditions that this building was a medieval chapel built by the monks of Newminster Abbey, this is probably just a simple farmhouse. The building was excavated by archaeologists in 1962. They found a long narrow roughly built building, with pottery dating to the 14th century. No finds were made of a religious nature and there was no sign of an altar or any of the other features that might be found in a chapel or church. It is possible that in the late 17th century it was used as a meeting house by dissenters. The location and image of the site is shown below.



The settlement here survives as remains approximately 48 feet east-west and 15.5 feet north-south. The area is divided into three compartments with a circular rampart to the north and east and the steep stream sides forming the natural protection to the south. The principle threats and issues to the site are regenerating trees, forest road maintenance, public access and watercourse erosion. The monument has been categorised as low/not at risk (EH risk category). Objectives of management are to:

- Ensure future preservation of the historic features by maintaining the area around the monument as an open space removing any naturally regenerating trees.
- Protect the site from damage during forest operations including road construction and maintenance operations. The site features on operational constraints maps and GIS dataset.
- Monitor the effect of public access on the site, especially the public footpath to the south.
- Monitor site for signs of erosion of Yoke Burn on south west corner.

Historic England will be consulted if any operations are planned within the risk zone (20metres) of the monument.

Non-scheduled features

A number of non-scheduled sites exist within the plan area indicated on the Conservation and Heritage map in Part 5. These include a number of boundary and standing stones along the eastern boundary of Uswayford and the north-east boundary of Kidland. The ancient drovers route of 'Salters Road' which passes through Uswayford is the name given to part of a route believed to have been used by salt traders during medieval period, part of which is shown below.

Another interesting feature is the remains of an illicit distillery in Uswayford known as Rory's Still. During the Napoleonic Wars the tax levied on spirits in England increased four-fold. The duty in Scotland was much lower, and the difference in price encouraged whisky smuggling down the drove roads that cross the Cheviot Hills. Excise men would patrol the hills, stopping and searching carts and travellers for contraband liquor. Smugglers like Black Rory and Whisky Jack Kane then turned to making their own whisky by local fast flowing streams. Local farmers secretly supplied the barley and peat for firing the malt kiln that was dug near the still. Rory's Still survives as a ruined rectangular building with the remains of a kiln at the west end. A tree now grows within its walls. It is built of rough stones against the hill slope, well-hidden at the junction of deep burn valleys. The building would probably also have been hidden by a sloping turf roof. A supply of water to cool the distillation would have been taken from the burn of Inner Hare Cleugh, here just above its junction with the Usway Burn.

The site of Rory's Still is shown in the mages below:

The footbridge in the picture below follows Salter's Road over the Usway Burn. The path goes left, through the forest climbing steeply to the Scottish Border. This is not, however, the site of Rory's Still despite the grid reference cited in archaeology literature.

Protection

Although none of these known features are scheduled monuments, the sites are recorded on the Forest District GIS dataset of historical records. These records and appropriate buffer areas around the features are used to generate constraints maps when forest operations take place to ensure protection. The ability to survey under dense tree cover is very difficult and whilst every effort is made to identify features of significance during the planning phase features may not be visible until work has commenced. As felling progresses any newly discovered sites are recorded and notified to the county archaeologist.

Timber potential

The productive capacity of the land is mostly good and the trees are generally growing well. Where Sitka spruce is planted an average yield class of 12 and above is obtainable. The yield class figure is *"the mean cubic metres timber growth, for each hectare of tree species for each year's growth on average through the rotation".* Other species are generally growing more slowly with some areas of moribund pine in Uswayford reflecting the original provenance rather than it true potential. Restructuring of the first rotation crop is now well progressed in Kidland, and the majority of the remaining first rotation crop are now at or beyond what would be considered their economic rotation age. There have been no felling interventions since establishment in Uswayford.

These sustainably managed forests are of local, regional and national significance and provide unique and valuable economic, social and environmental benefits and will continue to do so indefinitely, provided that restocking includes adequate areas of productive conifer species, which are required by the domestic wood processing sector. The revenue arising from commercial timber operations on the public forest estate makes a significant financial contribution to offset the cost of delivering a range of non-market benefits from the forests. These woodlands, together with others in the region, provide a vital wood resource upon which a successful wood processing sector has been developed in Northern England and beyond. These businesses produce a wide range of wood and wood based products, used in a variety of markets and the sector has made significant advances in increasing its market share in recent years, largely by import substitution. In addition, a wide range of valuable jobs are provided in timber harvesting, haulage, sawmilling, wood based panel production, paper products manufacture and related support services. Most of the value from these activities is retained within Northern England. With production from forests in Great Britain forecast to peak during the next 10-20 years, (although that peak is now being reached in Northern England), it is essential that a strategic reserve of timber is created and maintained in northern England to sustain the wood processing sector and continue the delivery of other benefits.

Pests and diseases

Roe deer are resident in the area and there is potential for damage to both tree crops and other habitat types through browsing and grazing. An annual cull is taken by Forestry Commission rangers; however, evidence of broadleaved regeneration would suggest it is impractical to grow broadleaves without protection in the form of tubes or deer fencing. Occasional sheep incursion occurs, however the impact has been minimal.

Larch is at threat from the disease Phytophthora ramorum and consequently is not to be planted currently. However, as both forests are located in a low risk zone larch will be accepted as a future component where it is regenerating naturally and future restocking of larch will be kept under review.

Communities and recreation

It is Forestry Commission policy to promote informal recreation such as walking, cycling, picnicking, and studying wildlife. We also seek to provide opportunities for more specialist users and for events when this is compatible with site conditions and other management objectives; for example annual downhill mountain biking and running events in Kidland.

The only formal provision for recreation use is in Kidland at Milkhope, where the only inhabitable property (with FC ownership) is leased to Astley Community High School for use as an outdoor centre.

Kidland is dedicated under the CROW Act as open access with the exception of a small area. Kidland is regularly used by the local community for walking, cycling and horse riding and has a good system of internal public rights of way linking to the wider countryside. The forest is a unique resource for leisure and recreation, making a significant contribution to public well-being.
In contrast Uswayford, although freehold, is not dedicated for open access due to reservations within the original conveyance at the time of acquisition; however, open areas of the forest were classified for open access land

under the mountain, moor or heath mapping. Consequently access into Uswayford is restricted to public rights of way or access by 'foot only' across the open access land approaching the forest entrance. Uswayford, due to its remoteness is less visited and usually in association with walking excursions to the wider area including accessing The Pennine Way to Cheviot, Salters Road, Clennell Street.

Access and roading

The only vehicular access into Uswayford follows the minor public road from Alwinton to link with the un-metalled access track to Uswayford Farm. The route, a distance of 10km, passes through Trow's, Barrowburn, Linbriggs and Alwinton with shared public access through to the MOD Otterburn range. There has been no previous use of this route for significant removal of timber. The un-metalled section requires upgrading and the suitability of the public road in terms of geometry, width and bearing capacity is not ideal considering the volume of timber due to be harvested. There is a forest road through Uswayford which would also require upgrade prior to commencement of harvesting operations.

In contrast Kidland has an extensive forest road network which has been used and upgraded since restructuring of the forest began in 2002. Approximately 20,000tonnes/annum from the FC holding in Kidland has been removed using the forest road network which links with an approved haulage route along the public road from Clennell.

Future forest management of Uswayford is dependent on the provision of suitable access into the forest. In addition to the public road three other options have been considered for transporting timber from the forest. These are described below and shown on Map 2.

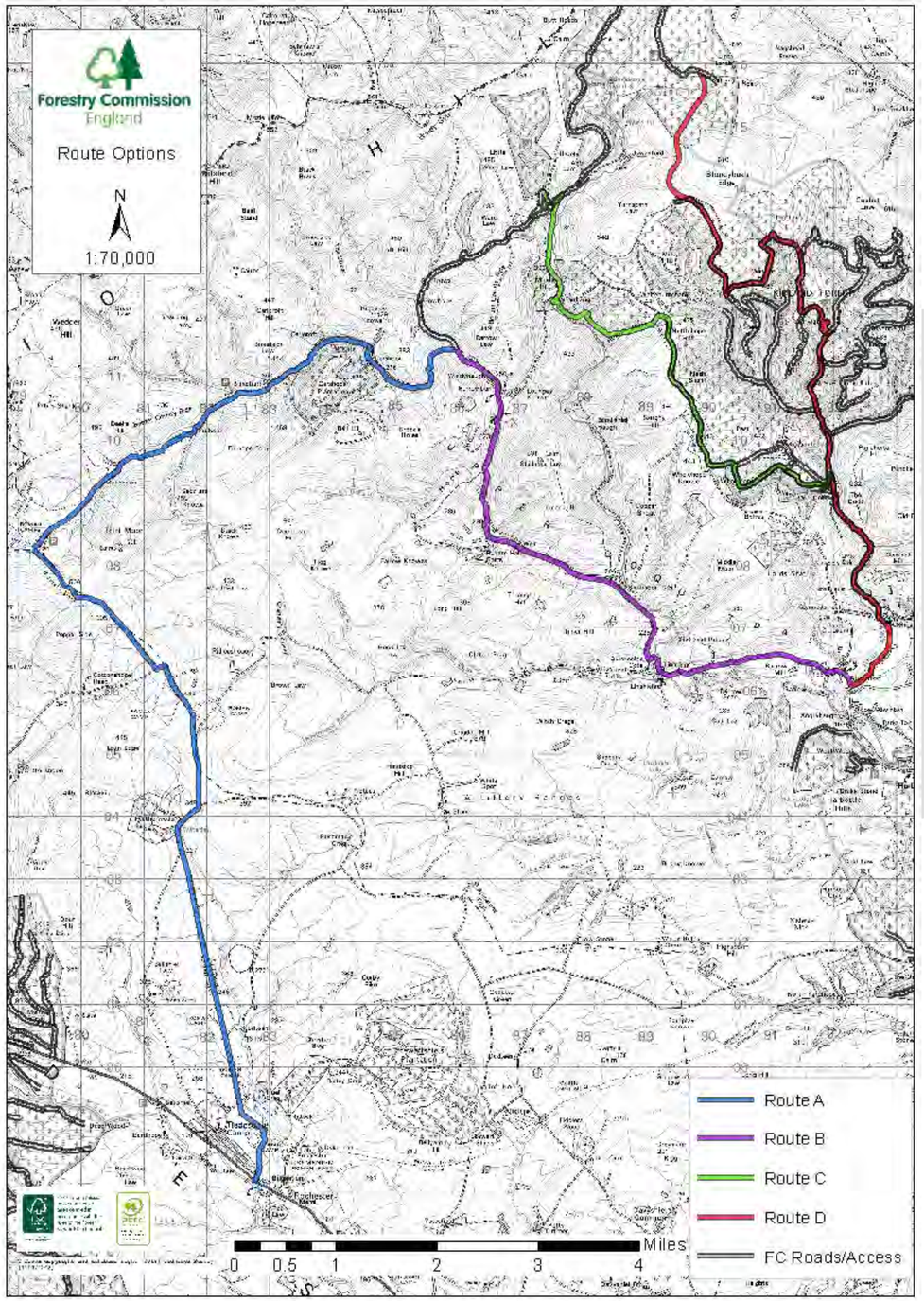
Route A – Otterburn Range - Unmetalled road south from Uswayford to join minor public highway (U2043) west for 9km to Chew Green. Then south along Dere Street for a further 12km through the MOD Otterburn range.

Route B – Public highway to Alwinton - Unmetalled road south from Uswayford to join minor public highway (U2043) south for 10km to Alwinton.

Route C – Lower route from Hebden Burn - Construction of approximately 1050m new road from Hebden Burn linking Uswayford with Kidland. Route travels south eastwards through private woodland to link with FC access south past Kidland Lee to Clennell.

Route D – Upper route from Uswayford - Construction of approximately 2450m new road from eastern end of forest road in Uswayford to join with FC access in Kidland, linking to the public road by the FC road network south to Clennell. This includes 990 metres of new road across the agricultural grazing land to the west of Bloodybush Edge and east of Uswayford farm.

Map 2



Each available route to transport timber from the forest has been analysed with regard to civil engineering, conservation and heritage, other traffic and landscape and visual impact. The table below summarises the outcome of the analysis. An initial Design and Access Statement is available as an appendix to this plan.

	Civil Engineering	Conservation and Heritage	Other traffic	Landscape and Visual impact
Route A	×	×	×	×
Route B	×	✓	×	✓×
Route C	✓×	×	✓×	✓×
Route D	✓	✓	✓	✓×

✓ = No negative impacts
× = Negative impacts
✓× = Possible to reduce/mitigate impact

In summary Route D is the preferred option for the following reasons:

1) It is the most feasible engineering solution.

2) There are no significant ecological or archaeological impacts.

3) There are low levels of other traffic and no formal rights of way along the route.

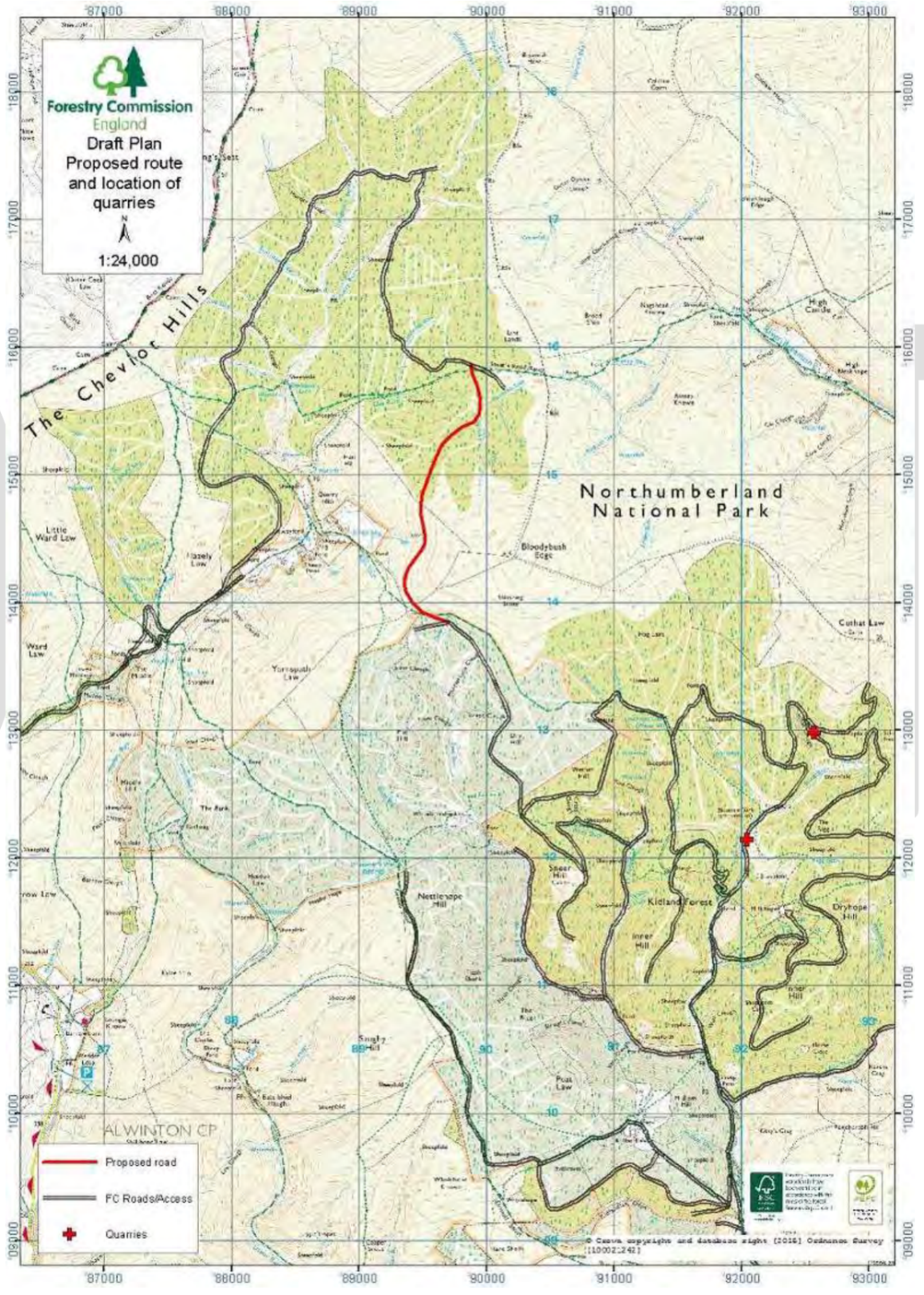
4) There is opportunity to mitigate the landscape impact through careful road design and route choice across the area. The convex slope makes the route less visible from above. Views of the route from the Pennine Way are distant in nature.

5) The route enters Uswayford at an elevation to coincide with the first harvesting coupe scheduled for 2017 so mitigation of the impact is possible at an early stage in the forest restructuring plan (see Felling Proposals map).

6) The timber will exit on to the public highway east of the village of Alwinton avoiding disturbance to the local community. The combined timber production plan for both forests means that the total volume of timber leaving the forest does not exceed the annual level harvested from the previous plan for Kidland and will be transported along a public road agreed as a haulage route with the “North East England Timber Transport Forum”.

The proposal to create this new private way for forestry purposes across agricultural land west of Bloodybush Edge will be subject to approval and screening for Environmental Impact Assessment (EIA). The proposed road line and location of quarries in Kidland, which will be used to supply stone for construction of the road, are shown on Map 3 and indicated on the Felling Proposals map. EIA screening is also required for a proposed forest road extension of approximately 1160m in SE Kidland and approximately 1100m of road required to facilitate harvesting in Hebden Burn plantation which are also indicated on the Felling Proposals map.

Map 3



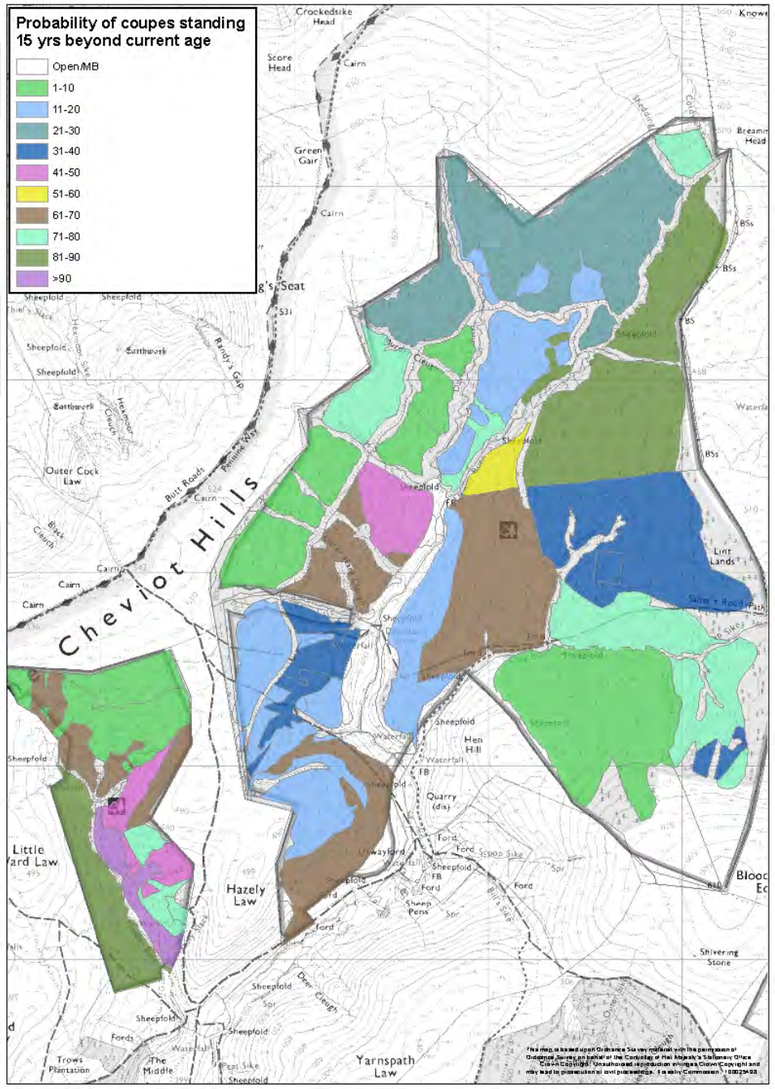
Part 2 Analysis and Concept

The factors outlined in Part 1 present various opportunities and issues. These are summarised below and represented on the Issues and Opportunities map:

Factor	Opportunities	Issues
Soils	The soils over most of the high plateau areas are best suited to commercial conifers such as spruce. Better soils occur in the valley sides and bottoms, and there is more potential for diversity with alternatives to spruce such as pines, cedars and firs and small seeded broadleaves. Open areas that were not stocked at first rotation should remain as open habitat.	Establishment of alternative conifer species would require deer fence protection. Where pines are planted in mixture with spruces establishment may be possible without the need for fencing. This would be kept under review. Soils map not of suitable detail to enable localised decision making. Peat depth survey would be advantageous to aid decision making.
Landscape	Further opportunities exist for landscape improvement through diversification of the age class structure, realignment of upper boundaries and greater species and stocking diversity.	The relatively narrow age class structure of the first rotation crops in Uswayford places constraints on the restructuring process. Introducing smaller coupe sizes would improve the age structure but would increase the risk of wind damage as it is difficult to fell to wind firm boundaries. Coupe size and boundaries will be influenced by existing wind firm edges. Uswayford in a prominent upland setting – careful restocking design and scheduling of felling coupes is needed Landscape impact of access proposals linking Uswayford to Kidland. Careful design and appropriate landscape appraisal has been included in the initial Design and Access Statement to mitigate and limit the impact.
Biodiversity	Significant opportunities for red squirrel population through management of Uswayford and Kidland as one reserve. Opportunity for more general conservation improvements associated with restructuring of Uswayford. Freshwater habitats associated with Alwin and Usway Burn in ‘good’ or ‘excellent’ condition demonstrating that the presence of conifer plantations has had no negative impact. Opportunities to enhance this situation through consideration of riparian habitat creation and good management of operations.	Coupe design and species choice will be influenced by wind and soils. Following good forest practice and adherence to statutory guidelines essential in order to minimise risk of sedimentation of watercourses during harvesting and planting operations. Some limited deep erosion of original forest drains in SE area of Uswayford requires mitigation which is possible during the early phase of harvesting and restructuring of the forest.
Access/Roading	Extensive forest road network in Kidland. Internal quarries provide stone for maintenance and future road building.	Limited access into Uswayford for significant timber harvesting. Upgrade of existing forest roads and any new roads will need careful and appropriate planning/construction
Current species	Sitka spruce currently performs favourably as a commercial species given the underlying soil and site conditions. There is opportunity for greater species diversity, both conifer and broadleaved.	Climate change projections predict that spruce will be less suitable beyond 2080. Experimentation with alternative conifer species and provenance will help indicate future opportunities for species diversity. Establishment of alternative conifer species or broadleaves may require fencing to protect from deer browsing.
Windthrow hazard	Potential opportunity for thinning in some more sheltered valley sides	High DAMS scores mean that there are limited opportunities for thinning or retention of crops. Coupe fell periods and boundaries may need to be reviewed in the future. Coupe boundaries in Uswayford restricted to existing windfirm boundaries.
Pests and disease	Establishment of alternative conifer species will improve resilience.	Possible impact of Phytophthora ramorum. Landscape implications particularly in the more sheltered valley sides where there is greater opportunity for species diversity.
Historic Environment	Scheduled and unscheduled features well documented and recorded. GIS based constraints mapping for operational contracts. SAM plan agreed with HE	Protection of as yet unknown features at risk during operations. Survey of closed canopy unbrashed crops impractical.

Coupe Design

Coupe shapes remain mostly unchanged in Kidland from the previous plan but some coupes have been rescheduled to smooth production and retain squirrel habitat across both forests. This is targeted mainly in the 2022-2026 period indicated in Part 6. In Uswayford coupe boundaries and felling periods have been influenced by the red squirrel population modelling, the aim being to extend rotation lengths as long as possible. The high windiness scores and limitation of wind firm edges from the first rotation crop are significant constraints. Coupe shapes and boundaries are therefore dictated by the existing road line and major rides and open areas but rotation lengths are variable depending on soil, species and the yield class of the crop. In Uswayford 'Forest Gales', a computerised wind throw prediction model, has been used to identify the percentage probability of coupes remaining standing for 15 years beyond present age shown in the probability map below:



Summary of Issues and Opportunities

Kidland and Uswayford are economically viable productive forests that contribute to income generation from the public estate through the sale of forest products and help to support the wider forest sector and employment in the North of England. Access to and within Kidland is good, with a well maintained network of forest roads. In contrast access to Uswayford is limited to use of the minor public road from Alwinton to link with the un-metalled access track to Uswayford Farm, a distance of 10km. A number of alternative options to access Uswayford are being considered. The principle commercial species is Sitka spruce, which, even under the higher emission climate change projections for the location and altitude, will remain suitable throughout the next rotation. There is however, opportunity to diversify the range of species and age class distribution which will contribute to future resilience to a changing climate, pests and disease, improve their appearance in the landscape, help to sustain the red squirrel population and make the forests more attractive to visitors. Active management and restructuring has been under way in Kidland since 2002 but such opportunities are yet to be realised in Uswayford through implementation of the forest plan where coupe design will need to make use of existing windfirm boundaries due to the high windiness scores across the forest.

Red squirrels are a notable species and the robustness of the red squirrel reserve is strengthened by managing the population across both forests. The scheduling of felling and movement of timber planned across two forests also reduces the impact of timber haulage to the local community and road network.

The existing open habitat in Uswayford, which was not afforested due to the presence of blanket bog, is in good condition partly due to lack of grazing and there is opportunity for further habitat enhancement opportunities, such as the creation of riparian habitat along river and stream corridors to create dappled shade for spawning fish and low density open woodland planting along forest margins which will be realised through implementation of the forest plan.

The continued management of Kidland in combination with the implementation of management in Uswayford provides the opportunity to deliver sustainable economic, social and environmental benefits including the provision of a wide range of ecosystem services such as forest products for construction and fuel, habitat restoration for rare or threatened species and environmental protection through responsible management and storage of carbon.

Part 3 Objectives and Proposals

The following objectives have been identified based on FEE National Policy and NEFD Strategic Plan

Forest District Strategic Goal	How Forest Plan delivers	Specific Plan Objectives
ECONOMIC <u>Wood Production</u> – ‘*we will optimise the financial return from timber production compatible with the achievement of other district objectives whilst complying with the UK Forestry Standard and meeting the requirements of the UK Woodland Assurance Scheme’*	Optimise economic value of recent clearfelling and existing conifer plantations through implementation of the harvesting and restocking plan. Continue restocking Sitka spruce through at least one more rotation and increase species diversity Seek to silviculturally thin crops with a Dams score less than 17 and where access permits thinning to be undertaken with no net forest cost or the net cost can be outweighed by the resulting improvement in the timber quality of the final crop.	In the ten year period of the plan (2016 – 2026) approx. 125,000m3 will be harvested. In addition to the planned felling, approximately 78 ha are currently felled and awaiting restocking, giving a total of approx.370ha of restocking from 2016-2026. This will be restocked in the following proportions: Conifers: 61% Broadleaves: 8% Open: 31% The main conifer species to be planted will be Sitka spruce along with other conifer species such as Scots pine, Serbian spruce, firs and cedars but only where protection can be guaranteed through either fencing or deer management. Much of Kidland and all of Uswayford are too exposed for thinning, although there may be scope in some of the more sheltered areas. A pragmatic approach to thinning will be taken, with opportunities taken where possible.
NATURE *‘we will continue to diversify the age class structure of our even-aged woodlands and increase the value of all our woodlands and forest for wildlife’* *‘we will ensure that rare and threatened habitats are protected and managed to maintain or enhance their conservation value’*	Environmental improvements will be delivered through forest restructuring achieved through forest planning, felling, and restocking and open space management. Management of Kidland and Uswayford as a single red squirrel reserve to increase robustness of future populations across both forests. Protection of freshwater habitats Enhancement of riparian corridors Upper forest margin habitat creation Open mixed broadleaved/ native William’s Cleugh Pine habitat	Delivery of felling and restocking plans Delay clearfelling a) valley sides where lower wind risk and more species diversity occurs to maintain food source and b) extend rotation lengths in Uswayford within limits of likely windthrow (according to Forest Gales methodology) to provide a more even profile of felling across both forests. Inclusion of early seeding species at restocking to provide a sustainable food supply, where deer fencing of SS/pine mixtures is practical. E.g. Lodgepole pine provides seed within 15yrs and final crop of SS. Exclusion of large seeded broadleaves (except hazel) at restocking. Combined felling plan (represented in Section 6 Plan Outcomes) Current and previous forest operations demonstrate that the freshwater habitat is not being adversely affected to change its good/ high condition status. Broadleaved planting along streams and other watercourses to provide dappled shade Establish low density scrub habitat on the forest margin to ameliorate the transition between forest and open moor and provide habitat for a variety of species including potential re-colonisation/introduction of black grouse. Using the results of the peat depth survey and yield class correlation we will create circa 37 hectares of more open sporadic native tree cover habitat (subject to the successful propagation of William’s Cleugh Pine)

work with others to achieve common objectives'	Historic environment and archaeological features will be safeguarded during forest operations. Northumberland National Park – Natural Environment Vision 2014-2035 *'There will be economically viable managed, productive forests and woodland in the National Park providing products such as timber and woodfuel…management options that will help conserve soil, biodiversity and provide economic return will be undertaken. Existing plantations will be remodelled to provide benefit for the natural environment as well as being productive.'*	Operational planning and contract management will recognise features of interest on constraints maps. Delivery of felling plan which aims to break up the even aged structure of the forest. In addition to more extensive expansion of mixed broadleaved woodland pockets of broadleaves will be included within the conifer plantations to improve visual and ecological diversity. Manage existing and future tree cover to provide a range of benefits, including red squirrel reserve management, helping to store carbon and reduce soil erosion, enhance landscape impact and provide timber, fuel and recreational opportunities.
PEOPLE '*we will utilise the land and resources at our disposal to assist communities close to our forests to enhance their environments and hence their quality of life'* '*We will provide public access to all our forests and woodlands where there are no legal or safety restrictions…'*	Improve the internal and external attractiveness of the woodland through restructuring and species choice. Impact of timber haulage on local communities and visitors - The combined production plan for both forests means that the total volume of timber leaving the forest does not exceed the annual level harvested from the previous plan for Kidland. The timber will exit onto the public highway east of the village of Alwinton avoiding disturbance to the local community of the Upper Coquet valley.	Species diversity and sympathetic management of external boundaries to enhance visual impact of the forest from public rights of way and the wider landscape. Represented in Section 6 'Plan Outcomes' average volume per annum is approximately 17.5Km³/annum and never exceeds 25Km³/annum which is the average volume that has been extracted from Kidland over the last ten years (Equivalent to 20,000T/annum). Maintain Public right of way network to a good standard and identify opportunities to enhance/improve visitor experience.

Appendix 1 Open Woodland

The aim is to establish an unevenly spaced tree cover from groups to sparse singletons to ameliorate the abrupt habitat change from the open moor to the high forest by establishing a low and varied density planting, establishing 300 – 400 trees per ha. The species mix will be based on the proportions in Table 1.

Table 1	
Species	Approx. %
Birch (Betula Pubescens)	40 -50
Willow (Salix aurita)	15 - 25
Rowan (Sorbus aucuparia)	10 -20
Aspen (populus tremula)[1]	5 -10
Alder (Alnus glutinosa)[1]	5 -10
Scots pine (Pinus silvestris)	5 -10
Juniper (Juniperus comunis)[2]	0 - 5
1 To be planted in localised areas where suitable ground conditions exist. 2 Planted only within its known distribution.	

There are no formal prescriptions for the most suitable means of establishing this form of open woodland. However, being woodland edge habitat, fencing (especially deer fencing) needs to be avoided where practical to do so. It is therefore proposed that initially areas identified to be restocked as open woodland will be planted at a density higher than the final required stocking, with the prescribed sporadic form of woodland developing through natural losses. Natural regeneration will also be accepted where is does not establish to a level which could diminish the habitat value.

Part 4 Monitoring plan

The objectives identified in section 3 will be monitored in the following ways to ensure UKWAS compliance;

Objective	Criteria for success	Assessment
ECONOMIC		
Wood production	Marketable parcels of timber on offer to the trade. Improved timber harvesting access and infrastructure	Production forecast and sales records Harvesting facilitated according to the felling plan
Sustainable economic regeneration	Successful establishment of crops.	Stocking assessment at year 5
NATURE		
Restructuring	Delivery of felling and restocking proposals	Five yearly Forest Plan review
Red squirrel reserve	Sustainable population and suitable habitat	Visual assessment and monitoring
Water quality		Monitoring harvesting and restocking operations.
PEOPLE		
Visual enhancement to visitors.	Establishment of mixed woodland and ongoing restructuring of the plantations.	Five year Forest Plan review.

Part 5 Forest Plan Maps

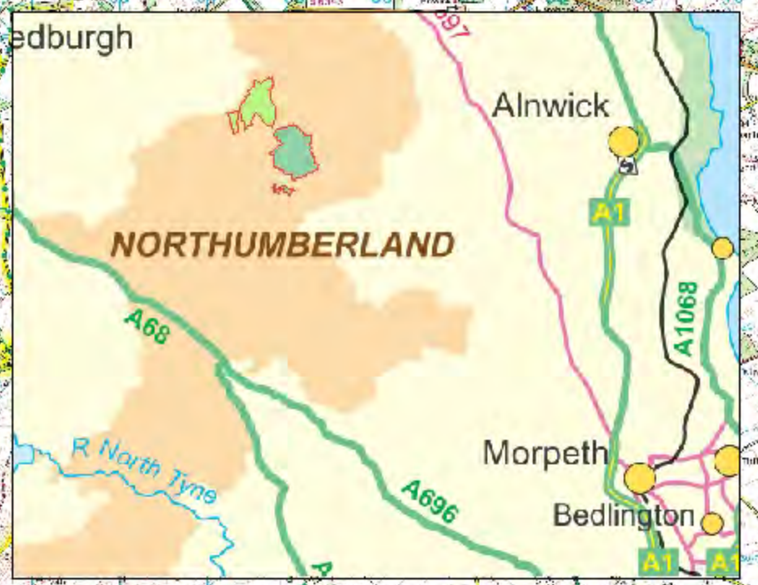
- Location – 1:70,000 scale showing location in context of other woodland in the local area
- Current Species – species composition in 2016
- Landform – indicating topography of the area showing dominant lies of force
- Wind Hazard - windiness represented by Detailed Aspect Method Scores (DAMS)
- Yield Class – indicating the productivity of the current species as mean cubic metres growth of timber for each hectare per year
- Economic Felling – optimum felling periods based on point of maximum mean annual increment of the crop
- Access and Recreation – formal public rights of way, open access areas and FC access
- Conservation and Heritage – statutory and non-statutory conservation and heritage features
- Issues and Opportunities – representation of significant issues and opportunities to be considered in the final design concept
- Design Concepts – broad design concepts formulated from the analysis of issues/opportunities appraisal of the plan
- Felling Proposals – showing five yearly coupe felling periods and location of proposed new road lines and quarries which require EIA determination
- Future Species – representing the long term vision for future species composition and open habitat

Forestry Commission
England

Location

N

1:70,000



Kidland

Uswayford

Other FC woodland

Forestry Commission
England

Current
Species

N

1:34,000

The Cheviot Hills

Northumberland
National Park

Spruces
Pines
Larches
Other Conifer
Mixed broadleaved

Forestry Commission
England

Landform

N

1:33,000

Uswayford occupies a more general rolling landform. The central valley containing Usway Burn is the most obvious internal feature but the forest is surrounded by a wide open isolated landscape with broad horizons, rounded summits, far reaching views and distant skylines

The landform of Kidland is dominated by a series of incised valleys with rounded ridges and hilltops. With the forest being contained within relatively narrow valleys there is an enclosed feel to the landscape.

Watercourses

50m Contours

Forestry Commission England

Detailed Aspect Method Scores

N

1:33,000

DAMS are an indication of the windyness of the site. Areas with high DAMs scores above 16 are more restricted in forest management objectives such as the ability to thin or extend the rotation length

The Cheviot Hills

Northumberland National Park

DAMS

- 12
- 14
- 15
- 16
- 17
- 19
- 20
- 22

Forestry Commission England

Yield Class

N

1:34,000

The Cheviot Hills

Northumberland National Park

0 - 4
6 - 8
10 - 12
14 - 16
18 - 22
24 - 32

The 'Yield Class' figure is the mean cubic metres growth, for each hectare of tree species for each years growth

Forestry Commission England

Economic Felling Period

N

1:34,000

Northumberland National Park

The Cheviot Hills

ALWINTON CP

BIDDLESTONE C

- Open
- 2011 or earlier
- 2012-2016
- 2017-2021
- 2022-2026
- 2027-2031
- 2032-2036

Forestry Commission England

Access and Recreation

N

1:34,000

The Cheviot Hills

Northumberland National Park

- Pennine Way
- Footpath
- Bridleway
- Restricted byway
- FC Forest Road/Access
- CROW Open Access Land
- CROW Dedicated Open Access
- Cheviots National Character Area

Forestry Commission England

Conservation and Heritage

N

1:33,000

The Cheviot Hills

Northumberland National Park

Memerkirk Scheduled Ancient Monument

- Red Squirrel Reserve
- Red Squirrel Reserve Buffer
- Local Wildlife Site
- SSSI
- Scheduled Ancient Monument
- Unscheduled Heritage Feature
- Conservation Site

Forestry Commission England

Opportunities and Issues

N

1:33,000

Felling coupe shapes and size will be influenced by existing windfirm boundaries in Uswayford

Opportunity to design more sympathetic windfirm boundaries in the future through design and restructuring

Uswayford very visible from Pennine Way and surrounding hill tops

Opportunity to ameliorate the transistion between forest and open moor through future planting of low density scrub woodland on upper forest margin.

Opportunity to establish area of mixed pine and small seeded broadleaved woodland to provide food and shelter for red squirrels during periods of forest restructuring

No access into Hebden Burn plantation New road required to facilitate harvesting

Shared internal forest boundary with private woodland owners

Vehicular access to Uswayford along minor public road unsuitable for use by timber lorries

Larch in Kidland and Uswayford at potential risk from Phythophora ramorum

Opportunity to restore/create extensive area of open/sporadic native tree cover habitat

Soil survey identified a localised area of deeper peat which is associated with crops of lower productivity

Predominantly single species 1st rotation plantation. Harsh external boundaries, limited internal open space and species diversity.

Good productivity of both forests contributes to economic viability supporting local jobs and forest industry throughout north england

Landscape impact of proposed new roadline linking Kidland and Uswayford

Cheviots represent an important and valuable historical, cultural and visual landscape

Opportunity to enhance internal and external landscape impact and species diversity through restructuring

Sympathetic road design with thorough planning and landscape appraisal will limit impact of roadline and provide opportunity to link Kidland and Uswayford as a single management unit

Restructuring in Kidland since 2001 has improved species and age class diversity. Retention of sheltered crops provides valuable food source for red squirrels

No access into Wholhope Hill coupes Road extension required to facilitate harvesting

Extensive forest road network in Kidland with suitable quarries located within the forest for road maintenance and potential new roads. Established use of public road south of the forest

Chevior Hills

ALWINTON CP

- Opportunities
- Issues
- Proposed new road
- FC Forest Road/Access
- Pennine Way
- Windfirm boundaries

Forestry Commission England

Design Concepts

N

1:33,000

Valley Woodland

In Uswayford there is opportunity to establish a mosaic of mixed small seeded broadleaved and open space. This will enhance both the internal and external landscape and benefit riparian corridors.

Habitat creation

Lower yield class crops (in the range 6 to 8) within a limited area of deeper peat could provide potential for the creation of mixed habitats of a more open sporadic tree cover.

Upper Margin

Harsh upper boundaries will be realigned at restocking. Through management of natural regeneration and lower planting densities a softer edge of scattered trees will enhance the woodland edge habitat and improve the external landscape particular from prominant locations such as the Pennine Way

Productive Zone

This zone forms the main timber production areas. Coupe design is dictated by windfirm boundaries and rotation length limited by the likely onset of windthrow on these exposed sites. Sitka spruce is the favoured species choice

Lower elevation boundary

Planting of lower density scattered small seeded broadleaved species to soften the external boundary and improve forest edge habitat

Species diversity

Aim to vary coniferous species choice to optimise food supply for red squirrels and provide greater species diversity in the landscape. This will make the forest more robust in the event of poor seed years compared to a single species crop. Productive capacity should remain a priority

Internal ownership boundary

Timing of clearfelling needs to be coordinated with neighbours to avoid instrusive straight edges. Future restocking should aim to establish a system of windfirm edges to allow more options for future rotations

Kidland Dean

Further opportunities to improve the upper external boundary through planting with mixed broadleaves and increased open habitat will be made during restocking. Felling and species mix also needs to take account of access and neighbours management plans.

Valley Woodland

In Kidland these areas provide the best opportunities to delay clearfelling and thereby retain coniferous tree cover of seed bearing age to maintain food supply for red squirrels. Retention will be dictated by the onset of windthrow.

Lower elevation boundary

Typified by poor ground conditions. Planting of clumped small seeded broadleaved species to soften the external boundary and improve forest edge habitat

- Habitat creation
- Upper margin
- Productive Zone
- Internal ownership boundary
- Lower elevation boundary
- Valley woodland
- Species diversity

Forestry Commission England

Felling Proposals

N

1:33,000

New forest road and timber transfer point to facilitate timber harvesting in Hebden Burn plantation. EIA screening required

New forest road linking existing road in Uswayford with FC access in Kidland. EIA screening required

New forest road extension to facilitate harcesting of coupes around Wholhope Hill. EIA screening required

- Proposed new road
- FC Forest Road/Access
- Quarries
- Open
- Recently felled
- 2017-2021
- 2022-2026
- 2027-2031
- 2032-2036
- 2037-2041
- >2042
- CCF/Min Int

Forestry Commission England

Future Species

N

1:33,000

Area of scattered broadleaved woodland and William's Cleugh Pine to create an open Caledonian type habitat. This will be subject to the successful propagation of WCP.

The Cheviot Hills

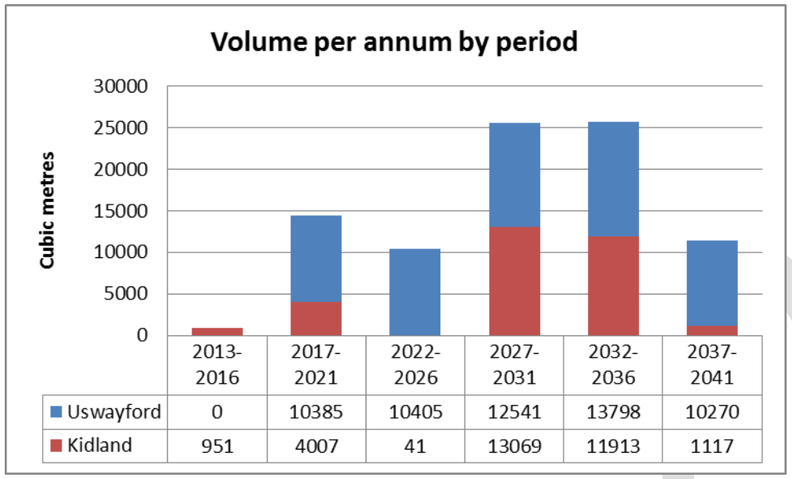
Northumberland National Park

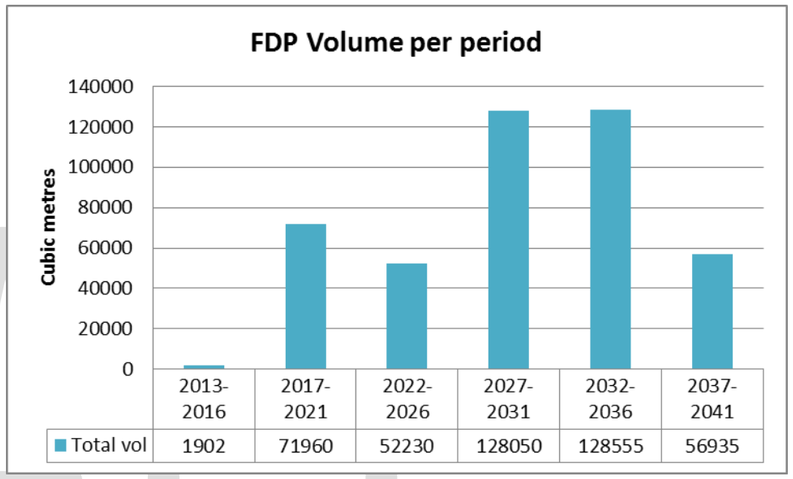
- Open
- Sitka spruce
- Other conifers
- Larch
- Mixed Broadleaved
- Mixed broadleaved/Open pine woodland
- Spruce/Scots pine
- Open edge woodland

Part 6 Forest Plan Outcomes

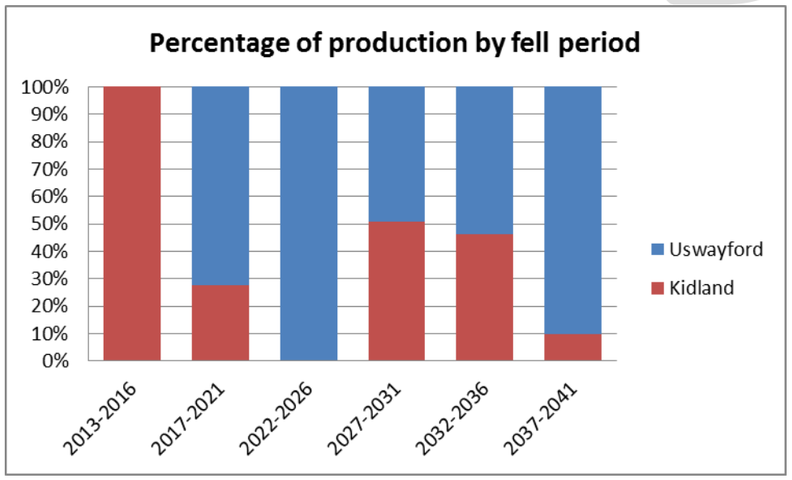
Timber production

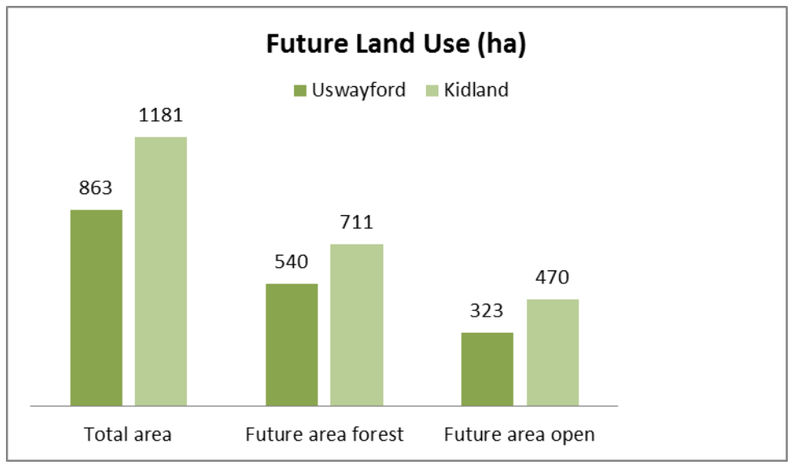
Average timber production is approx.17, 500m³/annum. Maximum annual production is approximately 25,000m³/annum (equating to approximately 20,000tonnes/annum).



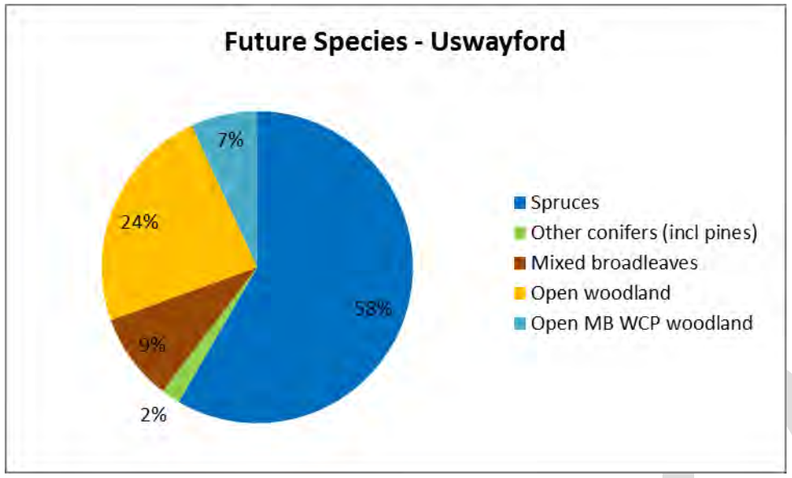


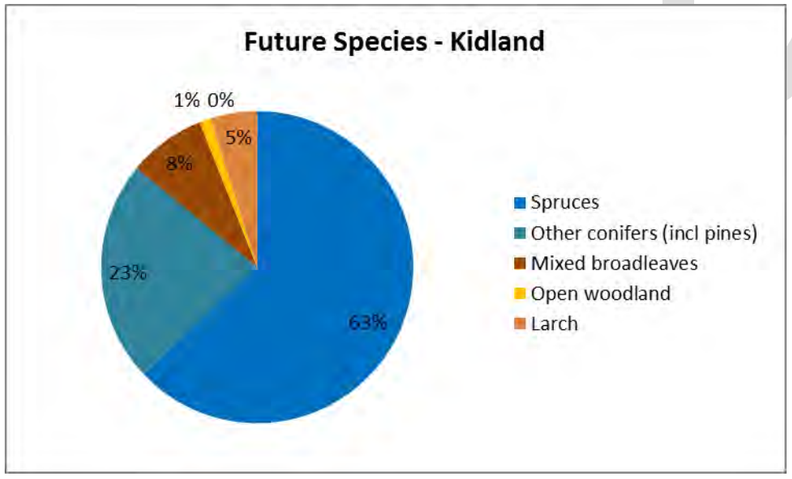
Future Land Use



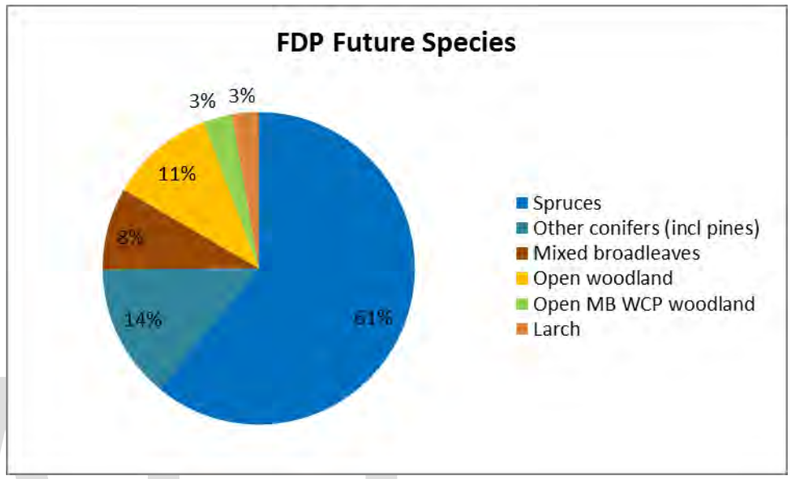


Future Species (following the full implementation of proposals)

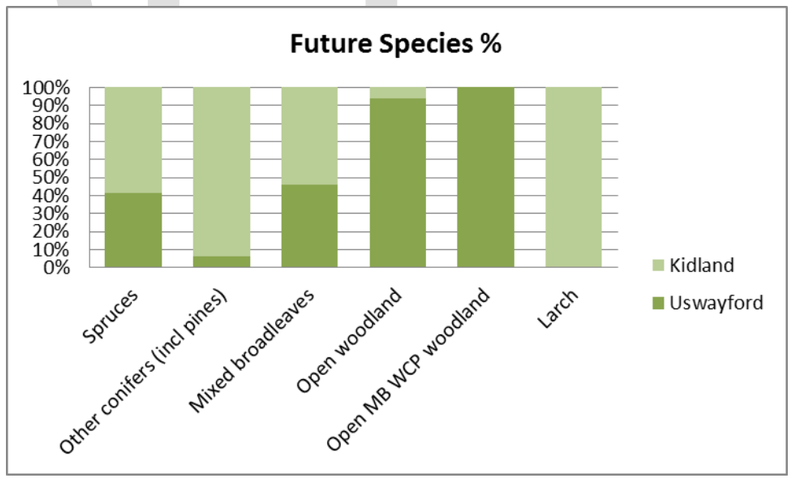




The combined percentages of future species composition shown below exceed the minimum requirements for UKWAS and UKFS (75% primary species (SS), 20% secondary species (MC) and 5% mixed broadleaves).



The graph below represents the percentage of each species in each forest.



Productivity

The productive potential is dictated by timber production achieved through delivery of the harvesting plan and delivery of ecosystem services and other non-market benefits included in biodiversity, climate change mitigation, water, people and landscape. This is represented in the Productive Capacity Analysis:

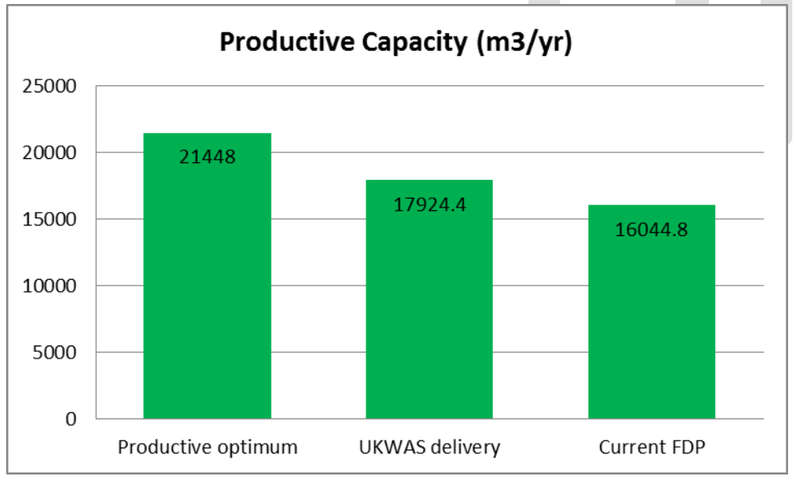
The graph below shows the relative productive capacity (m^3/year) of the forest based on average yield class as a comparison between the following scenarios;

1. Productive optimum – productive capacity assuming that the total productive area is planted with the optimum commercial species suited to the site (i.e. Sitka spruce YC 14).

2. UKWAS/UKFS delivery – productive capacity achievable through minimum UKWAS/UKFS compliance with a species percentage mix comprising 65% primary species (SS YC 14), 20% secondary species (MC YC 12), 5% broadleaved (YC 4) and 10% open space.

3. Forest Plan – productive capacity based on the percentage species mix and open land from this plan.

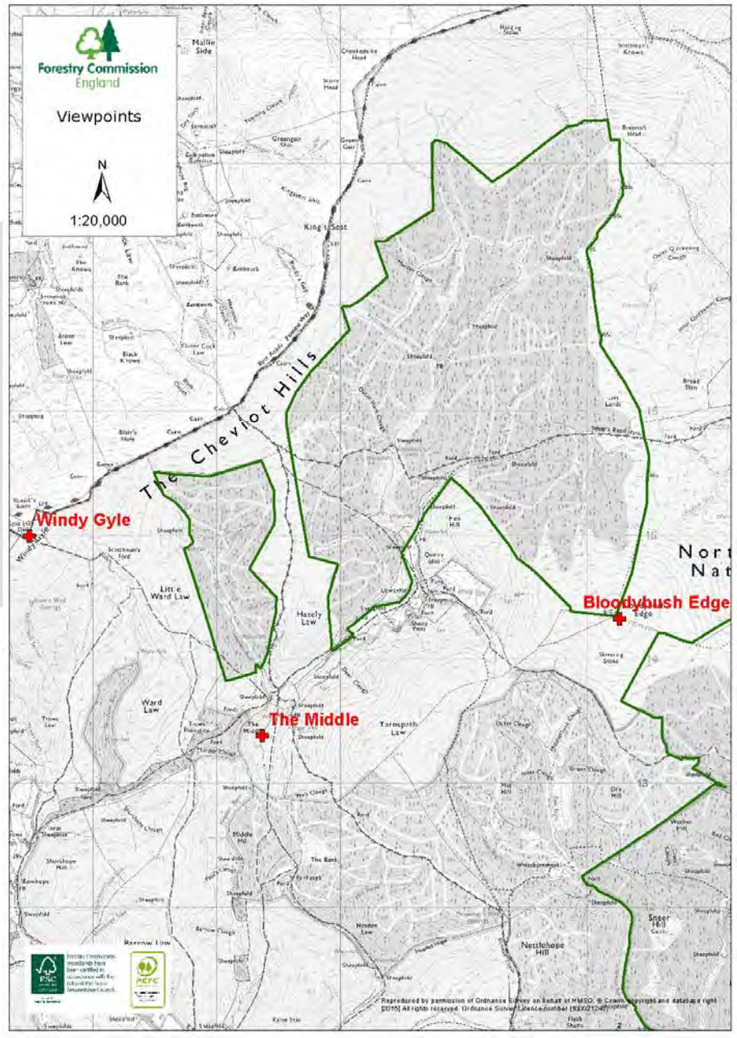
Note: The difference between UKWAS delivery and Forest Plan also includes requirements such as riparian corridors, landscape, ancient woodland, heritage etc. which require going beyond the minimum species composition and open space percentages to achieve UKFS.



Landscape

Visual sensitivity has been analysed with consideration to visibility and the importance and nature of views of the forest from several key viewpoints indicated on the map below. The landscape impacts of the proposals have been reviewed by the regional Forestry Commission Chartered Landscape Architect.

Landscape impact relating to the proposed road line west of Bloodybush Edge is detailed in the initial Design and Access Statement appended to this plan. As there are no significant changes relating to landscape impact for Kidland the following landscape analysis focuses on the impact of Uswayford on the wider landscape.



Colours in the following 3 dimensional representations correspond to the previous future species charts. Note that textural variations in the crops resulting from differences in age of trees during restructuring are not represented.

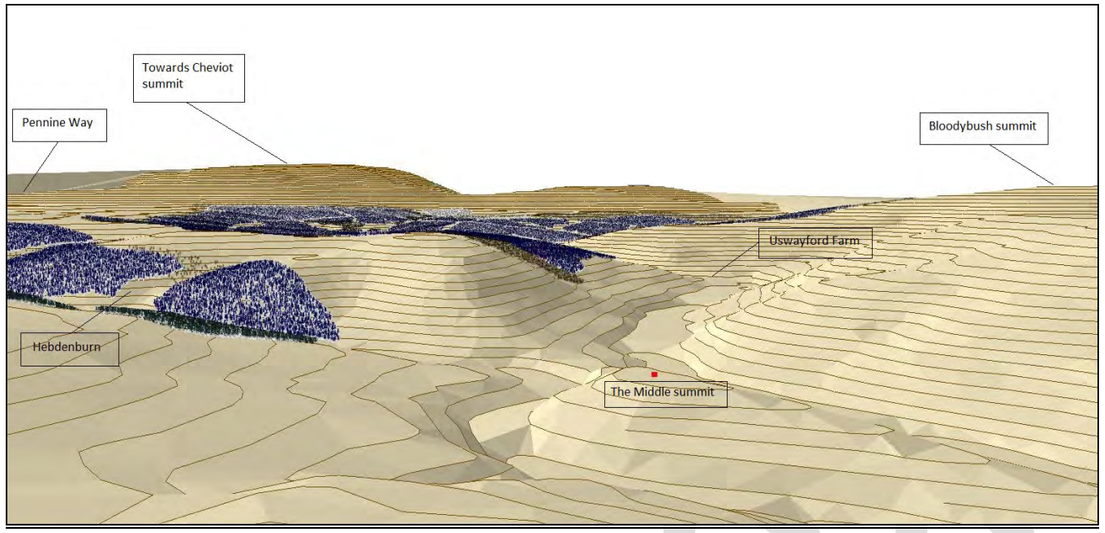


Figure 1 – 3 dimensional representation of future composition looking north from the direction of The Middle

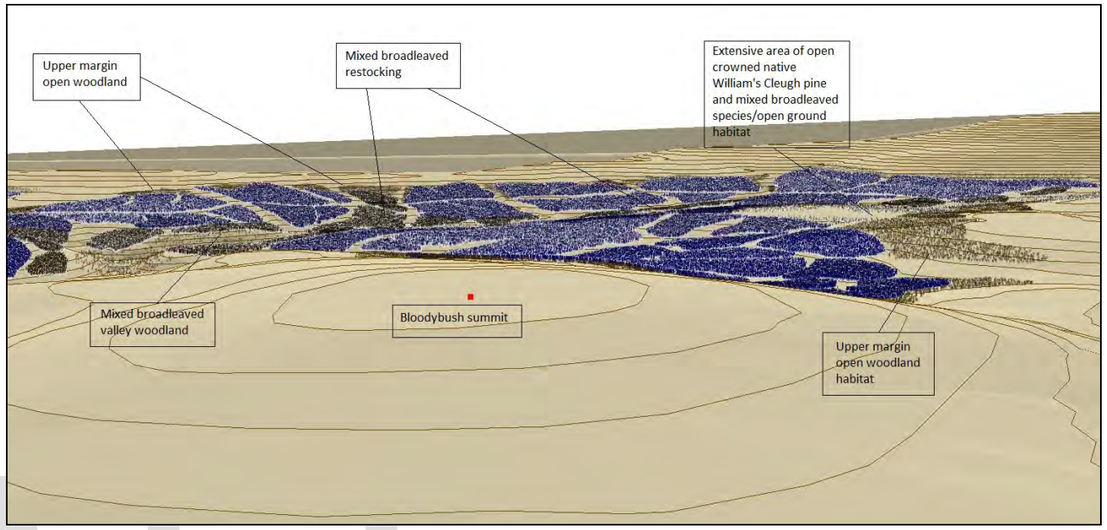


Figure 3 – 3 dimensional representation of future composition from Bloodybush looking toward Uswayford

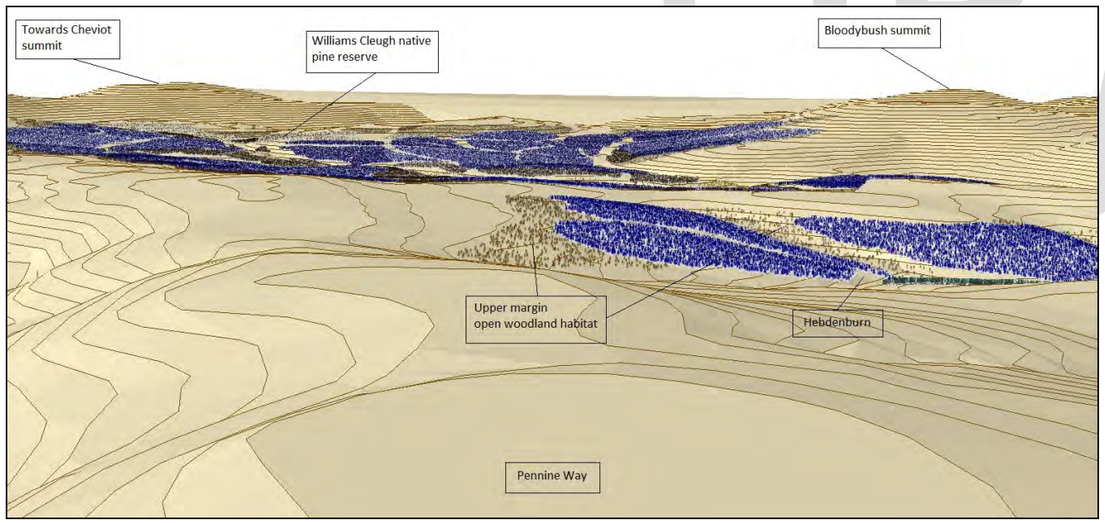


Figure 2 – 3 dimensional representation of future composition looking NE from the Pennine Way at Windy Gyle

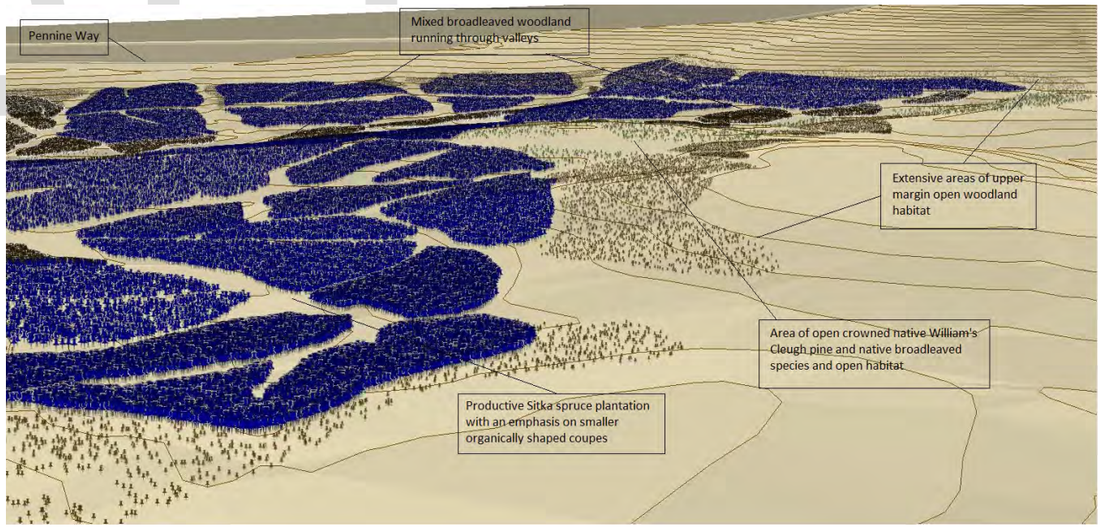


Figure 4 - Upper Uswayford representing future composition highlighting the extensive areas of open woodland habitat

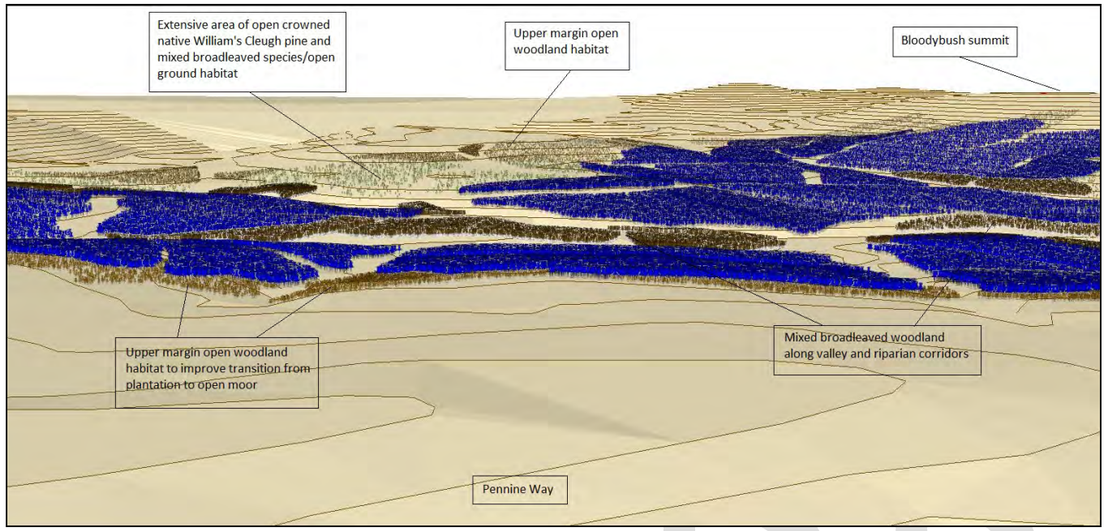


Figure 5 - 3D representation of future composition looking east from the Pennine Way with future areas of mixed broadleaved woodland in the valleys and riparian areas with upper margin open woodland adjacent to the forest boundary.

Over time the process of restructuring, through felling and restocking, provides the opportunity to correct existing shape and scale problems associated with the first rotation forest. Particular emphasis is made on mitigating geometric shapes, symmetry and distinct parallel lines in the landscape through coupe design, species choice and upper forest edge design. Felling coupe boundaries of the first rotation crops are influenced by windfirm boundaries but the design of smaller, organically shaped coupes will give wider flexibility in the future and greater resilience to the effects of climate change. Mixed broadleaved planting in the lower valley margins with scattered trees and clumps rising up watercourses, interlocked with the adjacent conifers, responds to the dominant upward lines of force and will provide a permanent framework of future broadleaved woodland. Establishment of low density unevenly spaced tree cover around the upper margins will ameliorate the abrupt habitat change from the open moor to high forest and the proposals to develop a 40ha reserve of native William's Cleugh pine and broadleaved woodland, incorporating open habitat will further contribute to both internal and external visual diversity.

Longer term management proposals

The proposals in this plan will lead to more diverse and resilient forests, with a greater range of species and habitats providing long term sustainability for the Red squirrel population. Substantial areas of native small seeded broadleaved woodland will have been established, and the range of conifer species will have been extended contributing toward greater resilience and diversity. Depending on the mix of objectives in the future, there will be a wider range of management options available. These will include a continuation of timber production from mixed stands but the presence of seed-bearing broadleaves will also offer the possibility of further extension of the native woodland resource through natural regeneration.

<u>The United Kingdom Forest Standard (UKFS)</u>

The UKFS is the reference standard for sustainable forest management in the UK which is supported by a series of guidelines which outline the context for UK forestry, defines standards and requirements and provides a basis for regulation and monitoring. The Cheviots Forest Plan is able to demonstrate that relevant aspects of sustainable forest management have been considered and the objectives in Part 3 show how sustainable forest management will be achieved. The plan provides a clear means to communicate the proposals and to engage with interested parties and serves as an agreed statement of intent against which implementation can be checked and monitored. In addition to conforming to general sustainable forest management principles UKFS is demonstrated in the following key areas:

Productivity	The productive potential is dictated by timber production achieved through delivery of the harvesting plan and delivery of ecosystem services and other non-market benefits included in biodiversity, climate change mitigation, water, people and landscape. This is represented in the Productive Capacity Analysis graph.
Structure	Future species composition; 61% spruce, 17% other conifer (including 3% larch) and 22% mixed broadleaved (including 11% open woodland and 3% MB/open native pine woodland), exceeds UKFS minimum requirements. Long term structure will improve through linking of permanent broadleaved and open habitats.
Silvicultural	Clearfelling is the principal system but continuous cover principles will be adopted in more sheltered parts of Kidland with Long Term Retention (LTR) of areas of broadleaved woodland. Implementation of harvesting and restocking plans will introduce further age class diversity.
Biodiversity	Priority habitats and species are considered during the planning phase. Red squirrel reserve status and ecological connectivity achieved by extending and linking areas of native broadleaved/pine woodland and open space will be enhanced ensuring that the area is managed with conservation and biodiversity as a major objective.
Climate change	Soil disturbance will be minimised in areas of Long Term Retention and Continuous Cover. Forest resilience will be enhanced over time through greater species diversity, particularly establishment of alternative conifers (17%), with age and stand structure diversification to help mitigate climate change and disease/pest outbreaks. Restructured coupe design will provide more wind firm boundaries which will give greater resilience and wider options for successive coupe design.
Landscape	The planning process refers to the Local Landscape Character Assessment to inform the forest design. Visual sensitivity is analysed in the landscape appraisal with consideration to visibility and the importance and nature of views of the woodland from several key viewpoints. Shape, landform and scale are considered with particular emphasis on mitigating geometric shapes, symmetry and distinct parallel lines in the landscape through species choice, upper forest edge design and coupe design.
Historic	Historic England consulted with regard to the Scheduled Ancient Monument in Kidland. Advice will be incorporated into operational management and 20m open area adjacent to features maintained. Future design planning has taken into consideration the context of the historical landscape
People	The Forest Design Plan is consulted with individuals, the local community and organisations with an interest in the management of the forest. Access, interpretation and provision of facilities for visitors are well managed.
Water	Adherence to Forest and Water guidelines during harvesting and forest management operations will help to maintain water quality. Over the next 10 years 17% of the wooded area will be clear felled which is within the UKFS acidified catchment threshold (<20% over a 3 year period).