



Forest of Dean
KNOCKALLS & BUNJUPS
Forest Design Plan
2010 - 2020



Forest Design Plan
Knockalls & Bunjups
Plan Period 2010 - 2020

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General description

Topic	Description	Implications for Management	Proposals
Location	<p>The Knockalls & Bunjups management unit is 283.8 ha of mixed woodland lying between Staunton and Coleford on the western edge of the Forest of Dean in Gloucestershire. The boundary between England and Wales follows the western boundary of Bunjups Wood.</p> <p>The previous plan also covered Bircham Wood, a small woodland to the south separated from the main woodland blocks. It has been excluded from this version of the plan as it is due for disposal during 2010.</p> <p>The majority of the area lies within Staunton Coleford parish with the exception of a narrow strip along the eastern boundary that lies within Coleford parish.</p>	<p>Knockalls & Bunjups is separated from the main block of the Forest of Dean and lies outside the boundary of the Statutory Forest. As such, it is not subject to the traditions of grazing and the rights of freemining.</p>	<p>Forest management will continue to deliver a range of benefits in line with the Strategy for England's Trees, Woods and Forests and the South West Regional Woodland and Forestry Framework. Delivery will be guided by the recommendations resulting from local stakeholder consultation and contained in the Forest of Dean Vision 2009 – 2019 document.</p> <p>Current woodland management practice has been independently certified by the Forestry Stewardship Council (FSC) as complying with the requirements of the UK Woodland Assurance Scheme (UKWAS).</p> <p>As of April 2010 the Programme for the Endorsement of Forest Certification (PEFC) has also certified forest management activities.</p>
Tenure & Management Agreements	<p>Knockalls & Bunjups is registered as freehold woodland with the Land Registry.</p>	<p>As freehold woodland the Forestry Commission has dedicated the area as access land under the Countryside and Rights of Way Act (CROW 2000) with the exception of the existing leased quarrying areas.</p> <p>There are no formal recreation facilities within the area other</p>	<p>Restrictions on public access are only likely to be applied when forest operations require working areas to be closed to the public for reasons of safety. It is unlikely that the whole area will be affected at one time.</p> <p>The area is used for low key informal recreation and there are currently no plans for recreation</p>

<p>Tenure & Management Agreements (cont.)</p>	<p>Stowfield Quarry in Blake's Wood situated on the limestone geology is currently leased to Tarmac for a further 24 years to permit the extraction of stone. The adjoining inactive Roger's Quarry was previously leased for quarrying but the lease has now been surrendered back to the FC.</p> <p>To the east of Stowfield Quarry Dingle Wood has been notified as a Site of Special Scientific Interest (SSSI). An area within the Dingle Wood SSSI and two areas in Blake's Wood of old iron ore workings known locally as scowles have been notified as Scheduled Ancient Monuments (SAM).</p>	<p>than two public rights of way running north/south through the area.</p> <p>There is evidence of low levels of off-road cycling usage in the steeper parts of the area.</p> <p>The existing quarry workings produce approximately 750k tonnes of stone annually.</p> <p>Planning permission was granted in 2010 to expand the area of quarry workings. The quarry will be extended to the north and also east to Roger's Quarry that will again be leased to Tarmac.</p> <p>Management plans for both the SSSI and the SAM have been prepared and implemented in consultation with Natural England and English Heritage.</p>	<p>development.</p> <p>Use of the area for off-road cycling will be monitored informally to ensure that there are no adverse impacts.</p> <p>Despite their size, the quarry workings are well hidden by the landform. The proposed expansion will bring the workings closer to the ridge of high ground that conceals them from Staunton village. Management of surrounding tree crops will need to take into account the landscape impact of future quarry expansion.</p> <p>Timber felled to accommodate the expansion of the quarry workings cannot be marketed using the FSC logo.</p> <p>The management plan for Dingle Wood SSSI was reviewed in 2008. Some minor amendments are proposed and the SSSI plan will be incorporated into this FDP that will serve as the agreed management document between Forestry Commission England and Natural England.</p> <p>The SAM management plan was due to be rolled over following the first five year period that ended in 2006. There is no record</p>
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<p>Tenure & Management Agreements (cont.)</p>	<p>Along with other sites across the forest district, Bond's Wood has been designated as a candidate Natural Reserve to satisfy UKWAS requirements.</p>	<p>Natural Reserves are composed of at least 5% semi-natural woodlands and 1% of plantations selected from across the forest district. They are permanent features that will be allowed to develop naturally.</p>	<p>that this is the case and requires clarification. Other than for safety reasons, no active management will be undertaken in this area.</p> <p>Other than for safety reasons, no active management will be undertaken in this area.</p>
<p>Physical Environment</p>	<p>Elevation in the plan area ranges from 80 – 250m asl.</p> <p>Aspect is predominantly south and west but there are a number of deep north/south oriented valleys.</p> <p>In the central area of Knockalls & Bunjups soils reflect the underlying limestone geology and are free draining slightly acid base-rich fertile loams. In Birchen and Bunjups the soils are derived from sandstone and quartz conglomerate geology and</p>	<p>The elevation range combined with the landform and limited access results in a number of sites that are difficult to work due to the degree of slope. Only the eastern side of the main block in Blake's Wood offers relatively straightforward working conditions.</p> <p>Other than the very highest ground, the site is not especially exposed and there has been no significant wind damage to crops following harvesting operations.</p> <p>The soils support a range of productive conifer and broadleaved tree species.</p>	<p>The combination of poor access and difficult site working conditions means that timber harvesting operations ideally need to be undertaken during the drier periods of the year on the more difficult sites.</p> <p>Where possible the boundaries of harvesting coupes should be aligned with wind-firm edges on the most exposed sites.</p> <p>A diverse range of species should continue to be used with douglas fir, larch species, ash and oak likely to be the principal species suited to these soils.</p>

<p>Physical Environment (cont.)</p>	<p>are free draining slightly acid loams of much lower fertility than the rest of the management block.</p> <p>The central and southern fringes of Knockalls & Bunjups have been surveyed as NVC W8 woodland. The remaining areas are predominantly W10 woodland.</p> <p>Access to Knockalls Inclosure, Blake's Wood and the lower elevations of Bunjups Wood is adequate for management purposes. However, access into the top of Bunjups Wood is limited as the existing route through Staunton is unsuitable for large timber lorries.</p>	<p>All of Knockalls & Bunjups is currently recorded on the provisional ancient woodland register. However, there is map evidence of the area dated to 1608 to suggest that large parts of the current woodland area had been cleared for agricultural use since 1600. This is supported on the ground by the presence of old stone walls that correspond with field boundaries marked on the map.</p> <p>The limited access to the northern part of Bunjups Wood and the steep terrain means that average extraction distances of over 600 metres to a suitable haul road are not unusual.</p>	<p>Following discussions with Natural England, large parts of the area have been agreed for removal from the ancient woodland register (July 2010).</p> <p>However, whilst the map evidence indicates that there has been a break in woodland coverage, ancient woodland plant indicators are still found in some of these areas. Native broadleaves will be used for restocking where there is strong site evidence to support their use regardless of any map evidence suggesting that the area does not comply with the generally accepted definition of ancient woodland. Elsewhere, unless areas are retained on the provisional ancient woodland register, conifers may be used in restocking.</p> <p>The feasibility of extending the existing roads in Bunjups or creating a new route to link with the road in Rodge Wood to the north should be examined. Improved access would not only reduce harvesting costs and promote management but would also substantially increase the capital value of the woodland.</p>
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<p>Landscape Setting</p>	<p>All of Knockalls & Bunjups lies within the Wye Valley Area of Outstanding Natural Beauty.</p> <p>The Forest of Dean Landscape Character Assessment identifies Knockalls & Bunjups as part of the Limestone Hills category, principally 2b – Highmeadow and Staunton and 2d – Newland Hills.</p> <p>Bunjups, Birchen and the west side of Blake’s Wood lie on steep ground on the edge of the Wye valley. There are a number of steep-sided interlocking valleys and ridges. On the eastern side, the terrain becomes much flatter.</p> <p>Unscheduled archaeological features have been recorded throughout the area, particularly in Blake’s Wood.</p>	<p>The Wye Valley AONB management plan aims to ensure that woodland throughout the AONB is managed sustainably and in a way that protects the outstanding ancient woodland character of the area whilst providing environmental, social and economic benefits.</p> <p>These landscape zones are characterised by rolling convex hills and interlocking dry valleys. There is extensive mixed woodland cover and small-scale agricultural field systems with a well-developed network of hedgerows.</p> <p>The complex landform provides a variety of viewpoints overlooking Knockalls & Bunjups. Many of these views tend to be more distant but the extent of the woodland makes it a prominent feature in the landscape.</p> <p>Known sites are recorded on the GIS mapping system used by site managers.</p>	<p>Native woodland will be restored where there are biodiversity benefits.</p> <p>The rolling landform means that careful consideration will need to be given to coupe design on the upper slopes due to their prominence in the landscape.</p> <p>Views from Staunton, Staunton Meend, areas to the south-west of Knockalls & Bunjups and areas to the west of Bunjups Wood will need particular consideration when planning felling coupes.</p> <p>Forest operations will be undertaken with due regard for these sites that will be identified during the operational site planning process.</p>
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<p>Management Objectives</p>	<ul style="list-style-type: none"> ∇ To continue the sustainable production of woodland products that also allows the delivery of a range of other public benefits and that provides future opportunities for the substitution of wood products for fossil fuels and other materials ∇ To restore ancient woodland in line with the 'Keepers in Time' policy and to protect areas of native broadleaved woodland ∇ To ensure that woodland management maintains the high quality of the AONB landscape. To deliver well-designed management proposals that comply with current landscape design principles and to develop the quality of the internal landscape ∇ To undertake management that protects and enhances woodland and open habitats and their associated species facilitating their resilience and adaptation to climate change ∇ To maintain Dingle Wood SSSI in favourable condition as measured by Natural England site management criteria ∇ To protect and maintain the Blakes Wood and Dingle Wood scowles Scheduled Ancient Monument in accordance with a management plan agreed with English Heritage ∇ To conserve cultural and heritage features ∇ To maintain the area for the benefit of low-key informal recreation
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Silviculture

Topic	Description	Implications for Management	Proposals
Silviculture: Species Choice (Figs. 1 & 2)	Broadleaves		
	Ash	Ash is a major component of one of the woodland types found in Knockalls & Bunjups Wood.	Ash will continue to be a principal component of future crops.
	Oak	Oak is concentrated in the west of Knockalls & Bunjups on the more acid soils. It prefers moist heavy soils. Demand for quality oak is fairly consistent.	Oak will be one of the principal species to be used on suitable sites. Current climate change predictions suggest that Q robur should be preferred to Q petraea on better sites.
	Beech	Beech grows well on sites in the east of Knockalls & Bunjups. The species is particularly vulnerable to damage by grey squirrels. Demand for timber is variable.	Although a potentially useful species, Beech will not be widely planted due to the threat posed by grey squirrels.
	Hazel	Hazel occurs frequently where the soils are more base rich. It has limited commercial value but suitable young material can be sought after for thatching rods.	Hazel will be used as a minor component on suitable sites when restocking is undertaken. If there is sufficient demand for young coppice material, Hazel should be coppiced on an 8 – 10 year rotation. Subject to demand, areas of over-mature Hazel could be brought back into production initially through use as firewood.
	Sweet Chestnut	Sweet Chestnut prefers well-drained slightly acidic soils.	Sweet Chestnut will be considered either as an alternative to oak on non-

Silviculture: Species Choice (cont.)	Cherry (<i>P.avium</i>)	<p>It is a potentially valuable timber and provides alternative fencing material that is durable and does not require treatment.</p> <p>Cherry prefers deep well-drained fertile soils and is found in many Herefordshire woodlands as a minor component.</p> <p>There is consistent demand for good quality cherry.</p>	<p>PAWS sites or up to 20% of the crop on PAWS areas.</p> <p>Cherry should be sparingly used as a minor component when restocking.</p>
	Wych Elm/Field Maple/Silver Birch/Rowan/Small Leaved Lime	<p>All are minor species of little commercial value but are typical components of the woodland types found in Knockalls & Bunjups.</p>	<p>Where specimens are still present within crops they should be retained and their regeneration promoted to add species diversity.</p>
	Conifers		
	Douglas Fir	<p>Douglas Fir is a species preferring relatively fertile free draining sheltered sites. It is the most widely planted conifer in Knockalls & Bunjups and is achieving good rates of growth on the majority of sites.</p>	<p>Douglas fir will continue to be the principal conifer species used in this area.</p>
	Norway Spruce	<p>Norway Spruce is suited to heavier gley soils. It has not been widely planted in Knockalls & Bunjups where the soils are relatively free-draining.</p> <p>In recent years in some areas of the forest it has suffered significant squirrel damage that has reduced its quality.</p>	<p>Norway spruce is unlikely to be considered for extensive planting in the future.</p>
	Larch species	<p>The larches prefer well-drained sites with varying degrees of shelter and moisture. European Larch is</p>	<p>Hybrid and European larch will continue to be considered for some sites. However, increasing</p>

Silviculture: Species Choice (cont.)			
		<p>more tolerant of drier sites than the other species</p> <p>Although a relatively low volume yielding species, larch is visually attractive but is susceptible to squirrel damage. It is sought after by the trade.</p>	<p>evidence of susceptibility to <i>Phytophthora ramorum</i> of Japanese larch resulting in death suggests that some caution must be exercised with regard to planting larch species.</p>
	Corsican pine	<p>Corsican Pine is suited to drier sites.</p> <p>Throughout the forest, crops appear increasingly prone to attack from Red Band Needle Blight that can seriously reduce productivity and lead to tree mortality.</p> <p>Although timber from younger crops can be difficult to market older material is readily saleable.</p> <p>It is a species in demand from the trade and quality stands can command a premium.</p>	<p>Given the current extent of Red Band Needle Blight in the forest, Corsican pine will not be planted in the foreseeable future. Further research will be undertaken on its control and the management of infected crops. In the meantime, preference will be given to species such as Larch, Douglas fir and Scots pine.</p>
	Western hemlock	<p>Hemlock is an attractive tree that is capable of high volume production, readily regenerates and is tolerant of a range of site factors.</p> <p>It is not a species valued by the timber trade.</p>	<p>Western hemlock will not be considered for planting in the future, but regeneration may be accepted for species diversity where native woodland is unaffected.</p>
	Scots pine	<p>Scots Pine is not generally as productive as Corsican Pine.</p> <p>Although mature specimens can be visually attractive it is currently a species that is not sought in large quantities by the trade.</p>	<p>Scots pine may be considered as a marginally higher yielding alternative to the larches on drier sites.</p>
	Western red cedar	<p>The site requirements of this species are similar to</p>	<p>Red Cedar should be considered as a restocking</p>

<p>Silviculture: Species Choice (cont.)</p>	<p>European Silver Fir/Japanese Cedar/Coast Redwood/Wellingtonia/Noble Fir</p>	<p>Douglas Fir.</p> <p>Timber can be difficult to market but is at times sought after, particularly in the larger sizes. Its foliage can command good prices.</p> <p>Although a minor species at present, it produces a durable timber that requires no preservative treatment. With increasing controls on the use of timber preservative treatments, there is evidence of increasing demand in the future.</p> <p>All are minor species but whose site requirements can be met in Knockalls & Bunjups. Currently they are of limited commercial interest to the trade.</p>	<p>species either as a pure crop or as a component of Douglas Fir crops.</p> <p>These species should be considered for trial planting to add species diversity given the uncertainty posed by the impact of red band needle blight, <i>Phytophthora</i> projected changes in climate.</p>
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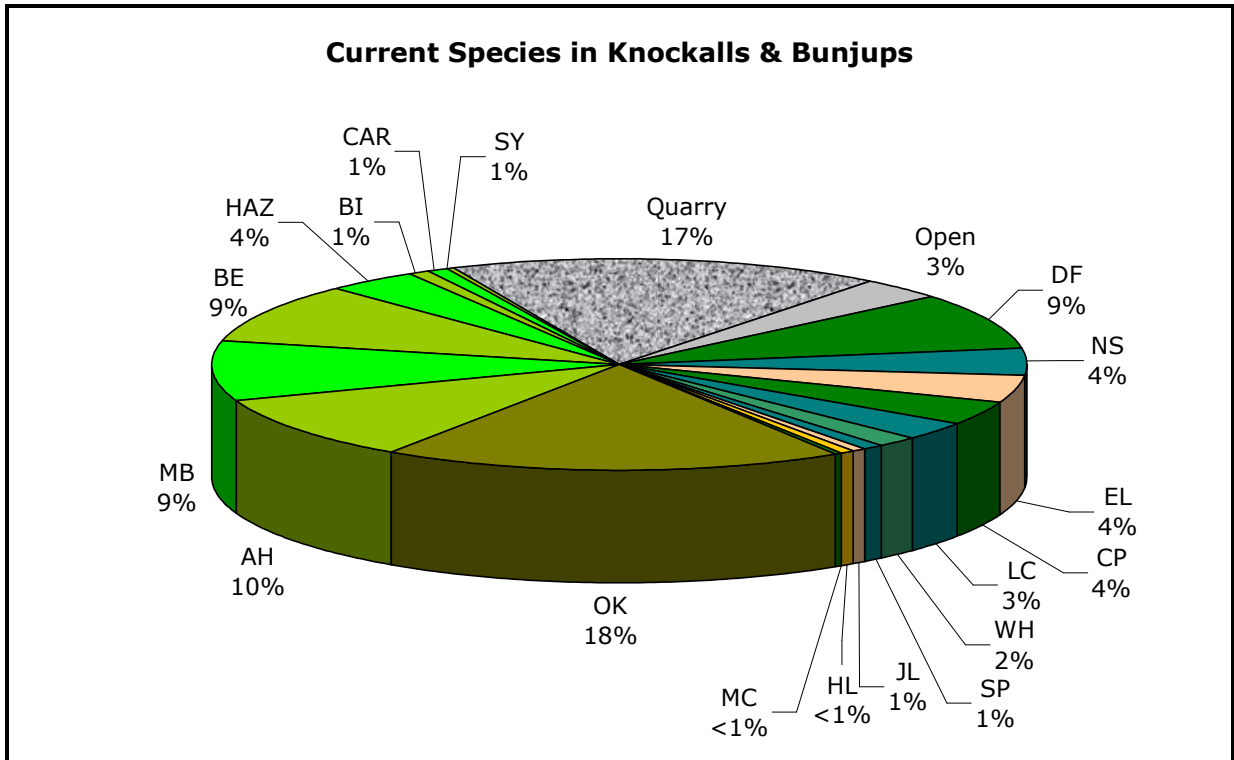


Figure 1: Current Species in Knockalls & Bunjups

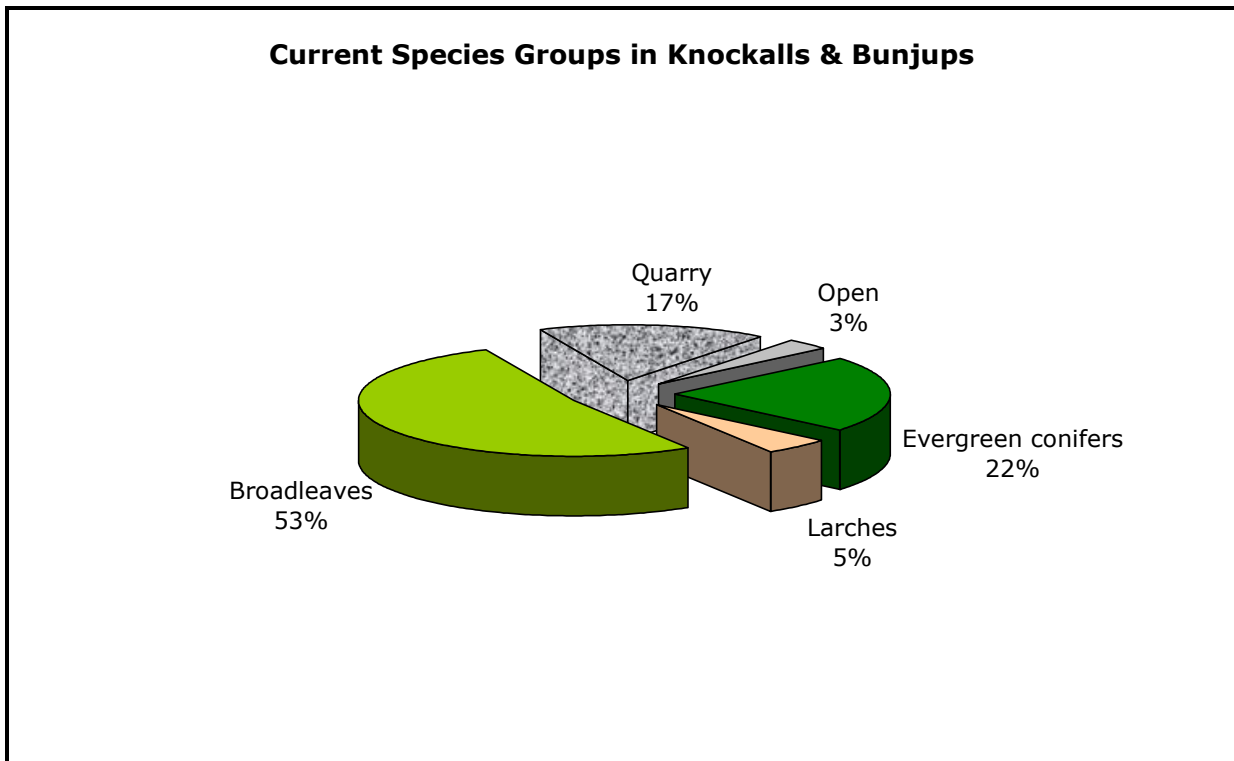


Figure 2: Current Species Groups in Knockalls & Bunjups

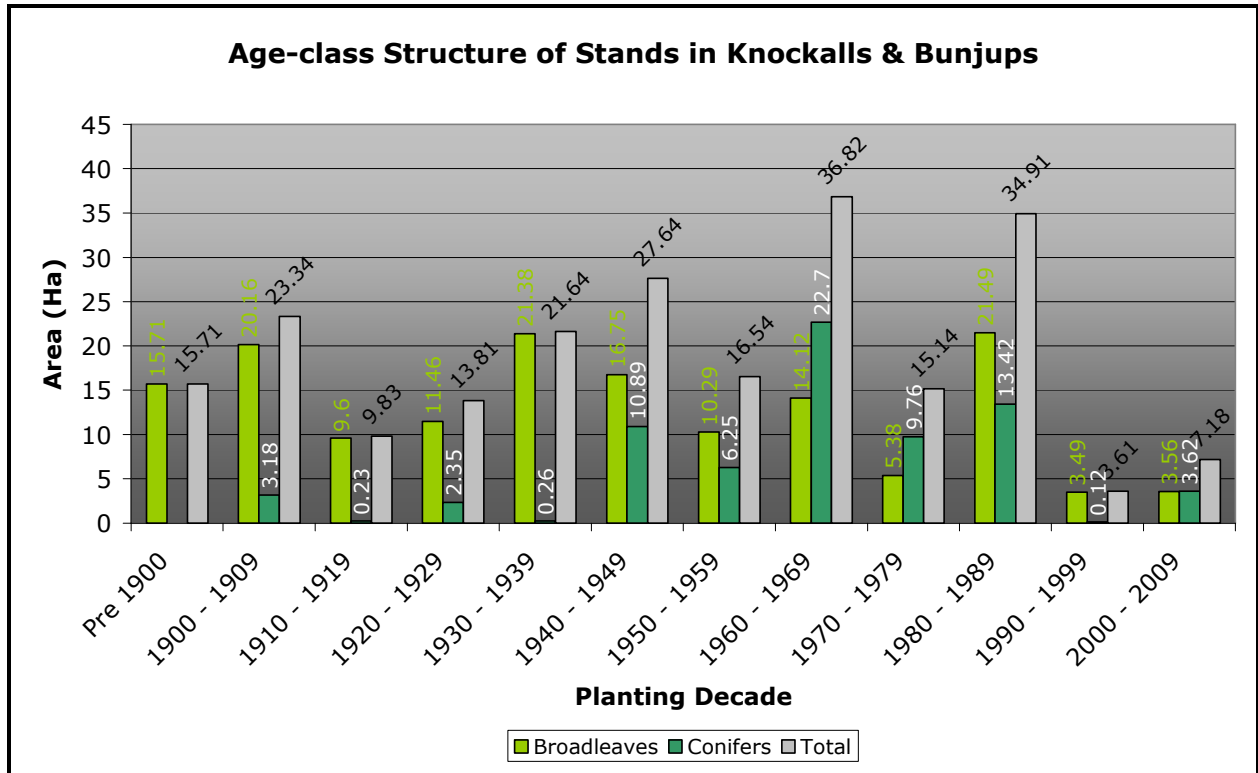


Figure 3: Age-class Structure of Stands in Knockalls & Bunjups

<p>Silviculture: Age Class Structure (Fig. 3)</p>	<p>Conifers & Broadleaves</p>	<p>The age-class structure of stands in Knockalls & Bunjups does not show the degree of variation that is seen in many other FC woodlands. The broadleaved crops are well represented in the older age-classes but there is the typical peak in the 1960s representing the expansion of conifer planting.</p>	<p>With the likely further expansion of quarry working and the restoration of PAWS the age-class peak in the middle of the C20th will be reduced and evened still further.</p>
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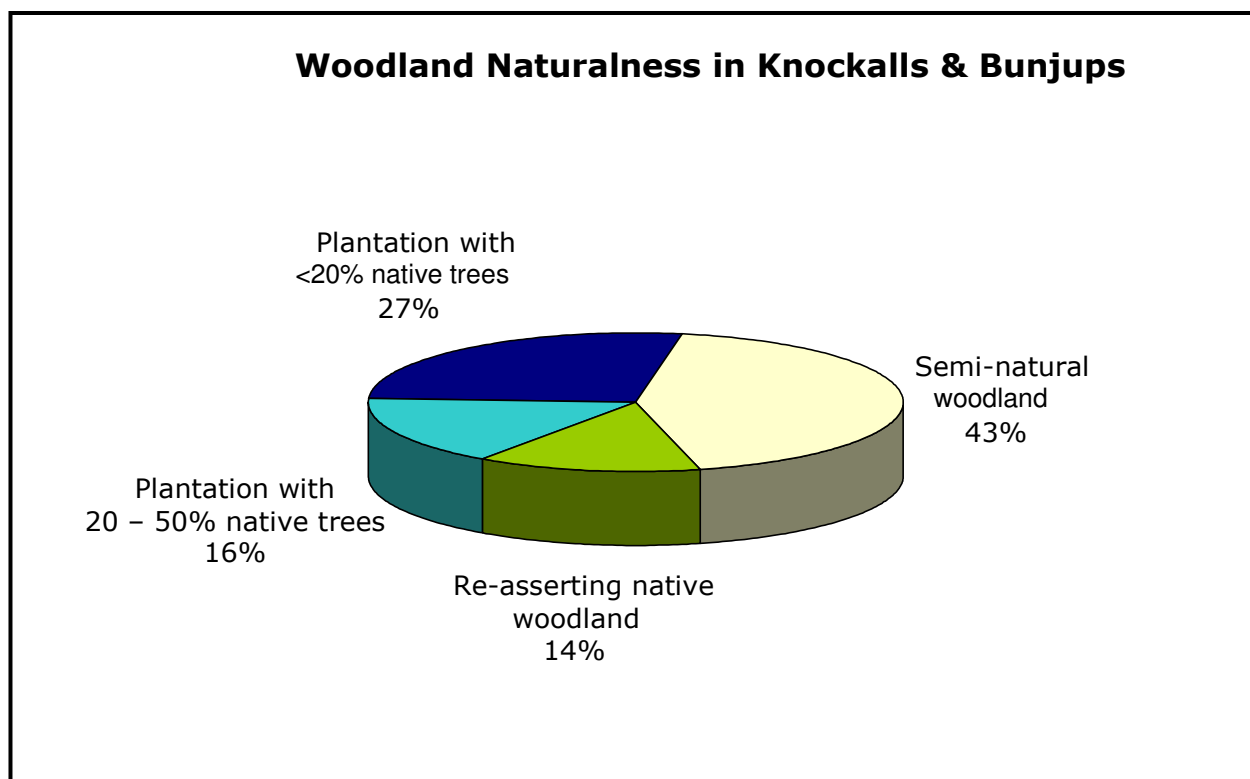


Figure 4: Woodland Naturalness in Knockalls & Bunjups

<p>Silviculture: Thinning & Felling</p>	<p>Over half of the woodland area is either semi-natural or re-asserting native woodland.</p> <p>The majority of the stands where native trees account for over 20% of the stand are in areas of W8 woodland where the soils are more fertile base rich soils and conifers are less suited to the</p>	<p>Oak and ash are the principal species with only limited quantities of other native species present. This reflects the long period of intensive management during which management has focussed on a limited number of commercial species.</p> <p>Natural regeneration of ash is the principal native species component of these stands. Where stands are on more acidic soils the native tree species are represented predominantly by birch.</p>	<p>In existing areas of broadleaved woodland future management should aim to increase species diversity where possible as well as ensuring a sustainable supply of quality broadleaves.</p> <p>Where extensive ash regeneration is anticipated, conversion to native broadleaves will continue through gradual removal of the conifers by thinning subject to further adequate natural regeneration. The aim will be to achieve a minimum of 2500 stems/ha. Adequate deer control or protection will be essential for this approach to be</p>
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Silviculture: Thinning & Felling (cont.)	conditions. Just over a quarter of the woodland is composed of stands where there are fewer than 20% native broadleaves.	The majority of these stands are located on the more acidic soils where the likely native species to regenerate is birch.	successful. This will be monitored as part of the pre-thinning assessment process.
	Conifer Thinning	Conifer stands will be thinned on a five-year cycle.	These stands will remain as conifers unless included on the provisional ancient woodland register. Conifers will be thinned if the stand basal area is close to or exceeds the minimum pre-thinning threshold basal area. In Knockalls Inclosure and Blake’s Wood conifer stands are due for thinning in 2014 and in Bunjups and Birchen Woods in 2010. Where the objective is to restore native woodland, native broadleaved species present in the stand will be favoured during thinning.
	Broadleaved Thinning	Broadleaved stands will be thinned on a ten-year cycle.	Management of broadleaved stands will be in accordance with the Forest of Dean District Broadleaved Management Plan. Stands will be considered for thinning if they have either achieved their pre-thinning threshold basal area or there is considered to be a silvicultural need. Broadleaved stands in Knockalls Inclosure and Blake’s Wood will next be considered for thinning in 2014. In Bunjups and Birchen Woods, broadleaved stands will next be thinned in 2015.

Silviculture: Thinning & Felling (cont.)	Conifer Felling	Subject to other management constraints, stands will be felled as close to economic maturity as possible.	Stands identified for felling will be felled as one operation at some point during the five-year period to which they have been allocated. Sites due to be restocked will normally be left fallow for at least nine months after felling. Throughout the plan area timber production is generally a management objective. Restocking of conifers will aim to establish a minimum of 2500 evenly spaced stems per hectare.
	Broadleaved Felling	With the exception of coppice operations, large-scale clear-felling of broadleaved stands will not be undertaken.	Where areas of PAWS are being restored to native woodland cover, restocking either through natural regeneration, planting or a mixture of both will aim to establish a minimum of 2500 stems per hectare.

Future Species Groups in Knockalls & Bunjups in 2021

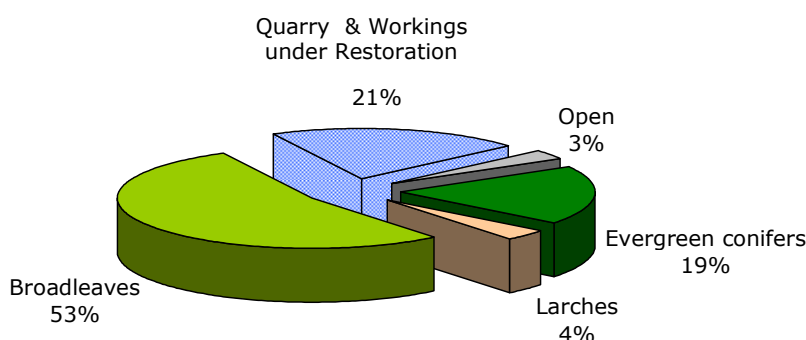


Figure 5: Future Species Groups in Knockalls & Bunjups in 2021

Future Species Groups in Knockalls & Bunjups in 2041

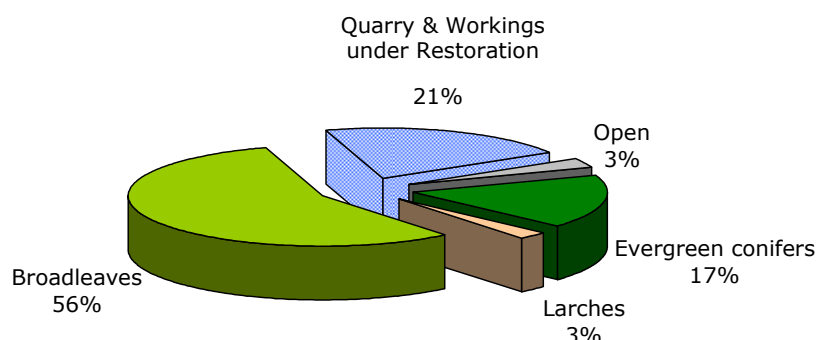


Figure 6: Future Species Groups in Knockalls & Bunjups in 2041

<p>Silviculture: Future Woodland Structure</p>	<p>Evergreen conifers and the larches currently account for 27% of the area split between 22% evergreen conifers and 5% larch species.</p> <p>The proportion of broadleaves is currently 53%.</p>	<p>In the first ten years of the plan there is a small reduction in both types to 19% evergreen conifers and 4% larch species.</p> <p>This trend continues to 2041 when it is expected that the proportion of evergreen conifers will have fallen to 17% and larches will have fallen to 3%.</p> <p>In the first ten years of the plan there is no change to the broadleaf extent.</p>	<p>The reduction in evergreen conifers is principally due to the expansion of the quarry into areas currently occupied by conifer stands and the continuation of the process of removing conifers from some mixed stands.</p> <p>Management towards 2041 sees a continuing process of removal of conifers from mixed stands and the conversion of some conifer stands to site native broadleaves.</p> <p>Although there is a reduction in conifers to favour broadleaves in some mixed stands and the conversion of one conifer stand to broadleaves, this is balanced by the loss of broadleaved woodland due to the quarry</p>
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<p>Silviculture: Future Woodland Structure (cont.)</p>	<p>The proportion of the area currently occupied by Stowfield and Roger's quarries is 17%. The proportion of other open space is 3%.</p> <p>Dingle Wood SSSI</p>	<p>Towards 2041 there is a projected small increase in broadleaves to 56% of the area.</p> <p>In line with the planning consent for the expansion of the quarry, the proportion of the area occupied by the quarry rises to 21% in the first ten years of the plan. This is not anticipated to increase further in the future. The proportion of other open space is not expected to alter significantly up to 2041.</p> <p>Management objectives to 2013 for the site are as follows:</p> <p>To maintain the current woodland extent and manage the woodland as native high forest of the type typical to the site.</p> <p>To safeguard bat hibernacula and bryophyte and ground flora interest in the scowles area.</p> <p>To manage the ride system to promote woodland structural diversity.</p> <p>To maintain the habitat</p>	<p>expansion.</p> <p>The conversion of conifer stands to broadleaves and the continuing process of removal of conifers from mixed stands produces this increase.</p> <p>Although there is loss of woodland as a result of the quarry expansion, as part of the planning consent, substantial additional funding will be made available by the quarry operators for appropriate coppice management for woodland biodiversity in woodland within 5km of the quarry.</p> <p>As existing areas of the quarry are worked out, there will be only be some basic re-profiling. Areas will be allowed to re-colonise naturally and some regeneration of tree species is anticipated.</p> <p>Management objectives will be met through appropriate thinning in areas outside the sowles area. Thinning will seek to diversify species and structure and will target the removal of seed bearing sycamore. Sycamore re-growth will subsequently be treated with glyphosate herbicide.</p> <p>A proportion of trees (nominally 10%) should be maintained on the site to be allowed to develop to biological maturity. An increase in the proportion of large standing and fallen dead wood should also be</p>
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<p>Silviculture: Future Woodland Structure (cont.)</p>	<p>Blake's Wood & Dingle Wood scowles SAM</p>	<p>type as broadleaved, yew and mixed woodland in favourable condition as assessed by Natural England management standards.</p> <p>The scowles currently extend to an area larger than that covered by the management plan.</p> <p>The plan presents different methodologies for those areas that lie outside the Dingle Wood SSSI:</p> <p>It recommends that broadleaved woodland is managed as high forest with minimal intervention.</p> <p>Where clear-felling operations are undertaken long-term systems for controlling invasive undergrowth that would mask scowles should be identified beforehand.</p> <p>Stumps should remain in place and no new planting is to be undertaken. Heavy</p>	<p>achieved, if necessary by ring-barking selected trees.</p> <p>Woodland structure along the length of the ride system will be diversified through heavy and variable thinning and a programme of rotationally flailing ride edges to promote ride edge structure.</p> <p>Ground flora extent and quality will require monitoring in the scowles area to ensure that it is not being lost as a result of either excessive shading or through the impact of deer browsing. Such surveys will be planned and undertaken through Natural England.</p> <p>The plan recommends a more detailed survey of the scowles area so that a revised plan covering all of the scowles can be produced.</p> <p>The county archaeology service will be consulted when operations are being planned that might affect the SAM area. The impact of management prescriptions will be regularly reviewed.</p>
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<p>Silviculture: Future Woodland Structure (cont.)</p>	Protected species	<p>machinery is to avoid access into the management plan area and light machinery should only enter when ground conditions are suitable and access routes agreed with archaeology staff. Within the Dingle Wood SSSI area, woodland cover is to be maintained and all of the other conditions relating to the remainder of the SAM area will be applied.</p> <p>There are recent records of dormice and great crested newts in Blake’s Wood and the latter only in Roger’s Quarry. Lesser horseshoe bats are also known to use underground sites for hibernation and other species will almost certainly use the woodland for foraging and roosting given the extent of broadleaved woodland and the age of some stands of trees.</p>	<p>Dormice habitat improvement will be undertaken by coppicing areas of over-mature hazel using the funding provided by the quarry operators under their planning agreement.</p> <p>All operations will comply with the guidance agreed with Natural England regarding the management of woodlands where EPS may be present. Operational site plans will confirm compliance with EPS guidance.</p>
	Dead wood habitats	<p>Given the history of intensive management in the area, there is only a limited dead wood resource although this is more plentiful in the mature broadleaved areas.</p>	<p>In line with district policy, existing dead wood habitats will be maintained subject to operational and safety requirements.</p> <p>As forestry operations are undertaken throughout the area, measures to increase the number and variety of dead wood habitats will be put in place. These will include retaining felled material on site and the creation of new standing</p>

<p>Silviculture: Future Woodland Structure (cont.)</p>			<p>dead wood where appropriate, particularly on felling areas where standing dead wood snags can be created at the time of felling.</p>
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Meeting Objectives

Objective	Description	Proposals & Monitoring
<p>To continue the sustainable production of woodland products that also allows the delivery of a range of other public benefits and that provides future opportunities for the substitution of wood products for fossil fuels and other materials</p>	<p>As part of the forest district's business plan and the organisation's customers' charter, the forest district is committed to financial and sustainable timber marketing targets. Management of the district's woodlands is undertaken in accordance with the UK Woodland Assurance Scheme as endorsed and certified by the Forest Stewardship Council.</p>	<p>Production forecast runs covering the period of the plan indicate that the proposed programme of felling and restocking combined with the ongoing production from thinning operations should ensure a sustainable supply of timber over the next thirty years.</p> <p>Sustainable production will be monitored as part of the forest district's marketing plan, five year production forecast and at the FDP five-year review. This process is audited as part of the FSC forest certification process.</p> <p>The Forestry Commission is already committed to making available supplies of timber for the wood-fuel market and this will be monitored as part of the district's marketing plan.</p>
<p>To restore ancient woodland in line with the 'Keepers in Time' policy and to protect areas of native broadleaved woodland</p>	<p>Although much of the area is currently shown as ancient woodland on the provisional ancient woodland register, large areas will be removed as a result of research indicating that they have not been continuously wooded since 1600. As such the requirement to replace conifer plantations with native broadleaved species will now longer be a policy requirement.</p>	<p>Despite their removal from the ancient woodland register, the plan has identified that many areas will in fact revert to broadleaved woodland either due to the quality of the ground flora or the benefit to be obtained from linking existing areas of broadleaved woodland or the extent of natural regeneration of native species.</p> <p>The plan identifies suitable strategies for converting areas of conifer plantations to native broadleaves for those areas that remain on the register.</p>

		<p>Protection of existing native woodland and the conversion from conifer woodland will be monitored through the sub-compartment database. Individual coupes will also be monitored as part of the five-year FDP review process.</p>
<p>To ensure that woodland management maintains the high quality of the AONB landscape. To deliver well-designed management proposals that comply with current landscape design principles and to develop the quality of the internal landscape</p>	<p>The expansion of Stowfield quarry creates some significant challenges to screening the adverse landscape impact of an operation undertaken on such a large scale.</p> <p>Large parts of the area covered by the plan are visible due to the prominent nature of the landform, all of which lies within an area designated for its landscape quality.</p>	<p>Areas that are important features for screening the quarry have been identified and appropriate management strategies put forward to maintain their in minimising the landscape impact of the quarrying operation.</p> <p>Where felling operations have been proposed, they have been designed to minimise any adverse impact on landscape quality. Principal viewpoints have been identified and the use of the Forester 3-D landscape graphics application has allowed felling proposals to be refined so that they conform with accepted landscape design principles.</p> <p>When operations are undertaken, their impact on the landscape will be assessed as the operation progresses. If required, small amendments can be incorporated at the time of the operation providing that the changes are not in excess of the thresholds detailed in the tolerance table in GLM 6.</p> <p>The impact of coupes will be assessed by fixed-point photography from principal</p>

		viewpoints. Such reviews will help to inform future proposals.
<p>To undertake management that protects and enhances woodland and open habitats and their associated species facilitating their resilience and adaptation to climate change</p>	<p>Forestry Commission England is committed to managing the public forest estate to deliver a range of woodland benefits including working towards meeting bio-diversity targets for a wide range of species and habitats. In addition a number of species found in woodland are afforded protection under either British or European legislation.</p>	<p>The sustainable programme of thinning and felling will continue to diversify stand and age structure that will benefit a wide range of species. The commitment to following agreed best practice will provide every opportunity for the maintenance of protected species present in Knockalls & Bunjups.</p> <p>The extent of overstood hazel coppice throughout the area is indicative of the importance of this crop in the past for coppice production. As a result of the successful planning application for the expansion of Stowfield quarry, it is hoped that funding may become available as part of a section 106 planning agreement that will allow some of these areas of hazel to be brought back into coppice cycle that will have a positive benefit for biodiversity.</p> <p>Ongoing formal and informal monitoring of habitats and species by FC staff, other stakeholder organisations and recording by individuals will provide feedback on the impact of woodland management.</p> <p>Analysis of the sub-compartment database will provide details of the increase in the proportion of lowland mixed woodland priority HAP.</p> <p>On a number of sites less</p>

		<p>commonly used species have been identified for restocking. This increases the variety of species and will assist in making the woodland more robust in light of projected changes in climate.</p> <p>The operational site planning system will minimise the risk of adverse impact resulting from forest operations and will also highlight opportunities where conservation benefits can be delivered.</p>
<p>To maintain Dingle Wood SSSI in favourable condition as measured by Natural England site management criteria</p>	<p>Although a large part of Dingle Wood SSSI has been planted with beech, a wide range of other native trees and shrubs remain through the site. There are extensive areas of calcicolous (lime-loving) ground flora particularly in the area of the scowles. Management objectives are aimed at maintaining the W8 woodland and the scowles in favourable condition. Favourable condition can be summarised as no loss of woodland, woodland with a developed storey structure, ground flora typical of the woodland type present and a developing dead wood resource.</p>	<p>The SSSI is currently in favourable condition. Natural England will be responsible for undertaking condition monitoring surveys the results of which will inform future management and confirm current condition status.</p>
<p>To protect and maintain the Blakes Wood and Dingle Wood scowles Scheduled Ancient Monument in accordance with a management plan agreed with English Heritage.</p> <p>To conserve cultural and heritage features</p>	<p>Forestry Commission England is committed to maintaining and conserving the historic environments present in its woodland.</p>	<p>The status of the current management plan for the SAM needs clarification as it is not clear whether it has been formally reviewed since its inception in 2001.</p> <p>Work in the SAM area will be undertaken in line with the recommendations of the plan.</p>

		<p>The pre-operational site planning system, liaison with the county archaeology service, ongoing contract management and supervision and the contract closure review system should ensure that operations can be undertaken without adverse impact on the scowles and provide useful information for any future operations that will be undertaken in the area.</p>
<p>To maintain the area for the benefit of low-key informal recreation</p>	<p>There is a consistent low level of recreation usage in Blakes Wood and Knockalls Inclosure primarily by local dog walkers. Bunjups is less well used but there is evidence of low-level off-road cycling through the wood. There are no formal recreation facilities other than public rights of way.</p>	<p>Forest operations will inevitably have an impact for woodland users. This should be minimised through communication regarding timing of operations, effective planning to minimise the impact of operations and appropriate re-instatement works when operations have been concluded.</p> <p>Recreation use will continue to be monitored informally by local staff and reviewed at five-year intervals as part of the wider FDP review process.</p>

Option Testing

Objective	Option 1 (Current FDP)	Option 2 (Proposed FDP)
To continue the sustainable production of woodland products that also allows the delivery of a range of other public benefits and that provides future opportunities for the substitution of wood products for fossil fuels and other materials	Average annual felling volume is broadly similar in all phases up to 2037 – 2041 when there is a sharp rise for this period. Production including thinning is slightly more erratic starting from a high point in 2012 – 2016 and reducing thereafter, although there is a small temporary increase around 2037 – 2041. The current plan does not provide details of any felling coupes after 2026.	Average annual felling volume is broadly similar for all phases except 2027 – 2031 when there is a low point. The overall average for each felling phase is lower than for option 1. Including thinning volume, production fluctuates but is similar in alternate phases although there is a trend of a long-term reduction.
To restore ancient woodland in line with the 'Keepers in Time' policy and to protect areas of native broadleaved woodland	Even with the reduction in woodland recorded on the provisional ancient woodland register, option 1 is not compliant with the Keepers' in Time policy.	Option 2 complies with the requirements of the Keepers' in Time policy and also allows some further expansion of the proportion of broadleaved species where appropriate.
To ensure that woodland management maintains the high quality of the AONB landscape. To deliver well-designed management proposals that comply with current landscape design principles and to develop the quality of the internal landscape	Whilst complying with accepted landscaping principles, the further expansion of Stowfield quarry was unforeseen. Some of the proposed felling operations would substantially reduce the screening to the quarry afforded by the adjoining woodland.	The rate of change is slower in option 2 that also complies with accepted landscaping principles. The plan has also been able to take into account the expansion of the quarry and ensure that there is adequate screening to minimise its visual impact.
To maintain Dingle Wood SSSI in favourable condition as measured by Natural England site management criteria	Management proposals in option 1 would have no adverse impact on the condition status of the SSSI.	The management proposals outlined in option 2 should ensure that favourable condition status is maintained in the SSSI.
To protect and maintain the Blakes Wood and Dingle Wood scowles Scheduled Ancient Monument in accordance with a management plan agreed with English Heritage. To conserve cultural and heritage features	Option 1 pre-dates the designation of the Scolwes SAM and the management proposals prepared as part of the site management plan. A number of felling coupes are proposed within or adjacent to the area of scowles that may result in the development of extensive ground cover after felling. This could result in the scowles being obscured or their	Option 2 proposes a slower rate of change in the scowles area that should avoid the potential problems that might arise from the proposals of option 1.

	existing ground flora being swamped by other species.	
To maintain the area for the benefit of low-key informal recreation	Option 1 should not have any significant adverse impact on recreation in the area. The reliance on felling and the pace of felling may attract comment from users.	Option 2 should not have any significant adverse impact on recreation in the area.
Option 2 more fully addresses the current management priorities & is the preferred option		