



Forestry England

Kingscote Wood Forest plan

(incorporating Kingscote
SSSI management plan)

2021-2031

Rachel Giles
Autumn 2021



Application for forest plan approval - Kingscote Wood - 2021-2031

Forest district	West England Forest District
Woodland or property name	Kingscote Wood
Nearest town, village or locality	Horsley, Gloucestershire
OS grid reference	Centre of the wood is at ST 8316 9721
Local authority	Stroud District Council / Cotswold District Council

Plan area	60.52 hectares
Conifer felling	0 hectares
Broadleaf felling	7.12 hectares (0.7ha clearfell; 3.95ha coppice; 2.47ha coppice with standards)

- 1) I apply for forest plan approval for the property described above and in the enclosed forest plan.
- 2) I confirm that the scoping, carried out and documented in the consultation record attached, incorporated those stakeholders that the FC agreed must be included. Where it has not been possible to resolve specific issues associated with the plan to the satisfaction of consultees, this is highlighted in the consultation record.
- 3) I confirm that the proposals contained in this plan comply with the UK Forestry Standard.
- 4) I undertake to obtain any permissions necessary for the implementation of the approved plan.

30th November 2021

Signatures removed for website

14th February 2022



Forestry England forests and woodlands have been certified in accordance with the UK Woodland Assurance Standard (UKWAS)



Agreement and consent for SSSI management plan - 2021-2031

Forest district	West England Forest District
Woodland or property name	Kingscote and Horsley Woods
Nearest town, village or locality	Horsley, Gloucestershire
OS grid reference	Centre of the SSSI is at ST 8329 9724
Natural England reference number	Unit ID 1013486
Period of plan	2021-2031

Signatures removed for website

The signing of this plan by Natural England gives the necessary consent under Section 28 (6) of the Wildlife and Countryside Act (1981), as amended, for the management prescriptions detailed in this plan to be undertaken without necessity to consult prior to each operation during the plan.

Forestry England will keep a written record of work carried out during the period of this plan.

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Section 1 - Vision, objectives and drivers

Forestry England - who we are and what we do

We are the country's largest land manager, caring for the nation's forests for people, nature and the economy. The foundation of our organisation is our world-class sustainable management of the nation's forests.

Our vision for wildlife...

The nation's forests provide the most valuable places for wildlife to thrive and expand in England.

Our vision for people...

The nation's forests are a living treasure for all, deeply connected to people's lives improving the health and wellbeing of the nation.

Our vision for climate...

The nation's forests are resilient to climate change, increasing their value for communities by producing high-quality, sustainable timber and absorbing carbon emissions.

For more information about our plan - Growing the Future 2021-2026 - please visit our website: <https://www.forestryengland.uk/growing-the-future>

Our vision for Kingscote

In 100 years...

Kingscote is a broadleaved woodland, supporting an array of flora and fauna. There are areas of temporary open space, and the woodland is more complex than it is currently - with a wider variety of ages and layers within each stand, and species and provenance choices made in the intervening years making it resilient in the face of climate change.

The wood generates a variety of sizes of timber - from high forest and from areas of coppice - which are adapted over the decades to meet the needs of future generations, and Kingscote is important for other ecosystem services such as surface water management and carbon storage.

The legacy of past management remains, with numerous mature and veteran trees providing wildlife habitats and seed - for future crops in Kingscote and elsewhere.

Key drivers and objectives of management at Kingscote

(see pages 18-23 for how we will achieve and monitor the objectives)

Drivers of management in all Forestry England woodlands:

Driver	Objectives - 2021-2031
1. Sustainability	We will practice exemplary forest management in Kingscote Wood - endorsed by our continued certification under the UK Woodland Assurance Standard.
2. Resilience	We will encourage the gradual diversification of species and age structure, in order to ensure that Kingscote thrives in the face of pests, diseases and climate change.

Priorities for management at Kingscote:

Driver	Objectives - 2021-2031
3. Biodiversity	The rich ecological environment of both the SSSI and the rest of the wood will be nurtured, and the diversity of habitats and species increased through management, including coppicing and provision of temporary / permanent open space, and standing and fallen deadwood.
4. Productivity	Kingscote is a working wood - we will continue with small-scale timber production, and work with nurseries to make best possible use of the registered seed stands.

Other important considerations at Kingscote:

Driver	Objectives - 2021-2031
5. Water	Careful management of Kingscote's streams and springs provides constantly changing habitat and conditions, and the 'leaky dams' offer natural flood management, benefiting residents of nearby towns.
6. Community	Kingscote is valued and enjoyed for low impact recreational activity by the local community and other users including walkers and horse riders.

Section 2 - About Kingscote

Location

Kingscote is a beech dominated woodland of just over 60 hectares, in a sheltered valley near Nailsworth, Gloucestershire (see **Figure 1**).

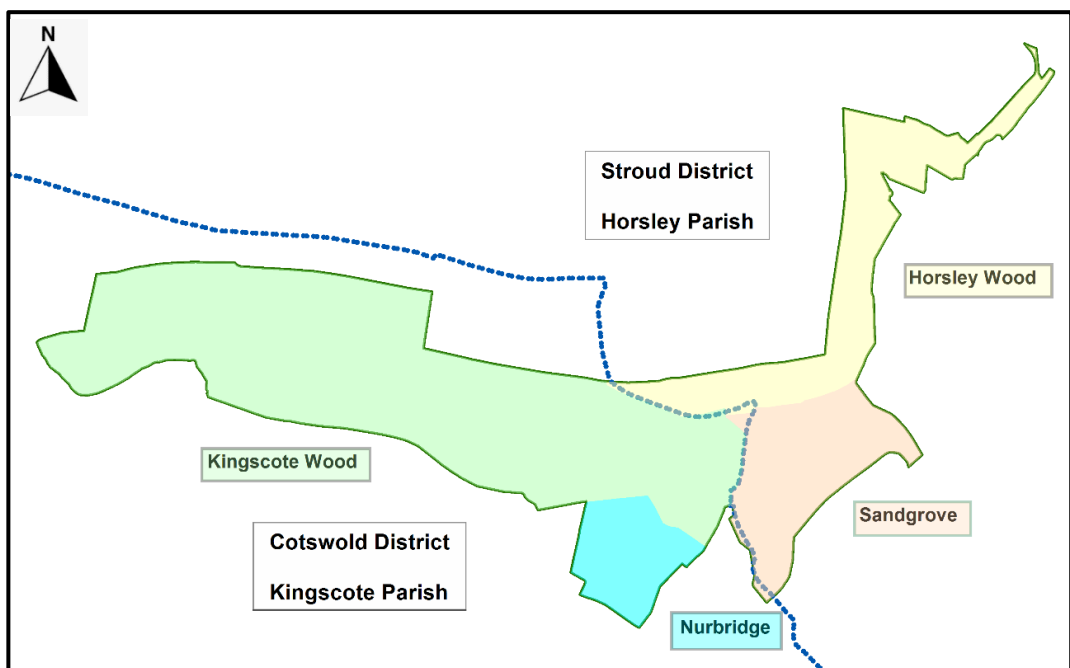


Figure 1 - Location map

Kingscote Wood

Although Forestry England now refers to the whole wood as ‘Kingscote Wood’, maps and written records give various names for different sections - possibly areas that were owned by different people in the past. The parish and district boundaries cross the wood - the eastern sections are in Stroud District and Horsley Parish, and the western parts in Cotswold District and Kingscote Parish (see **Figure 2**).

Figure 2 - Map to show the named parts of the wood, and the district / parish boundary (blue dotted line)



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Landscape and designations

Kingscote lies in the Cotswolds Area of Outstanding Natural Beauty (AONB) - see **Figure 3** - and is typical of the Nailsworth 'Settled Valley Character Area' mentioned in the AONB's Landscape Character Assessment, being a predominantly deciduous ancient woodland of almost entirely native species (see **Figure 4**) in a wider rural landscape of hills and valleys, with small scattered patches of similar woodland.

Figure 3 - Cotswolds AONB

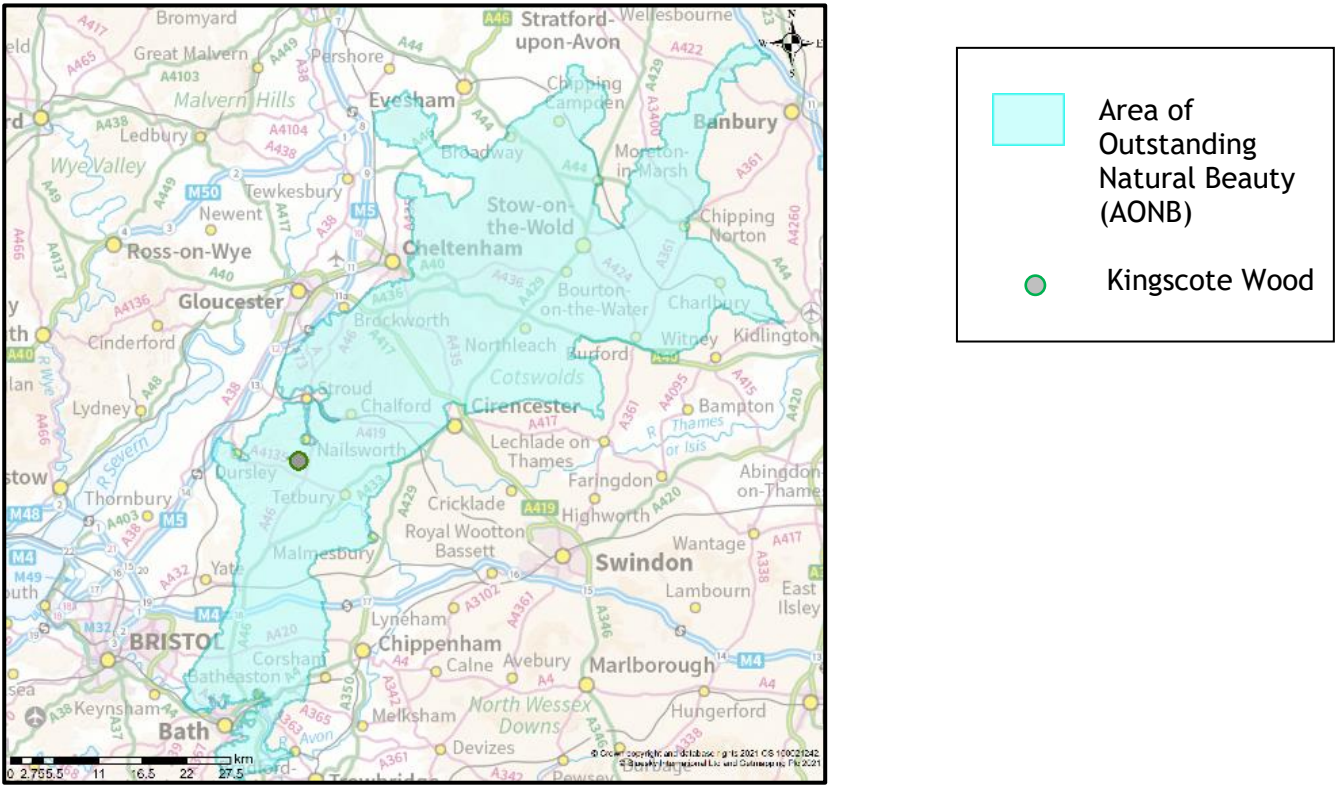
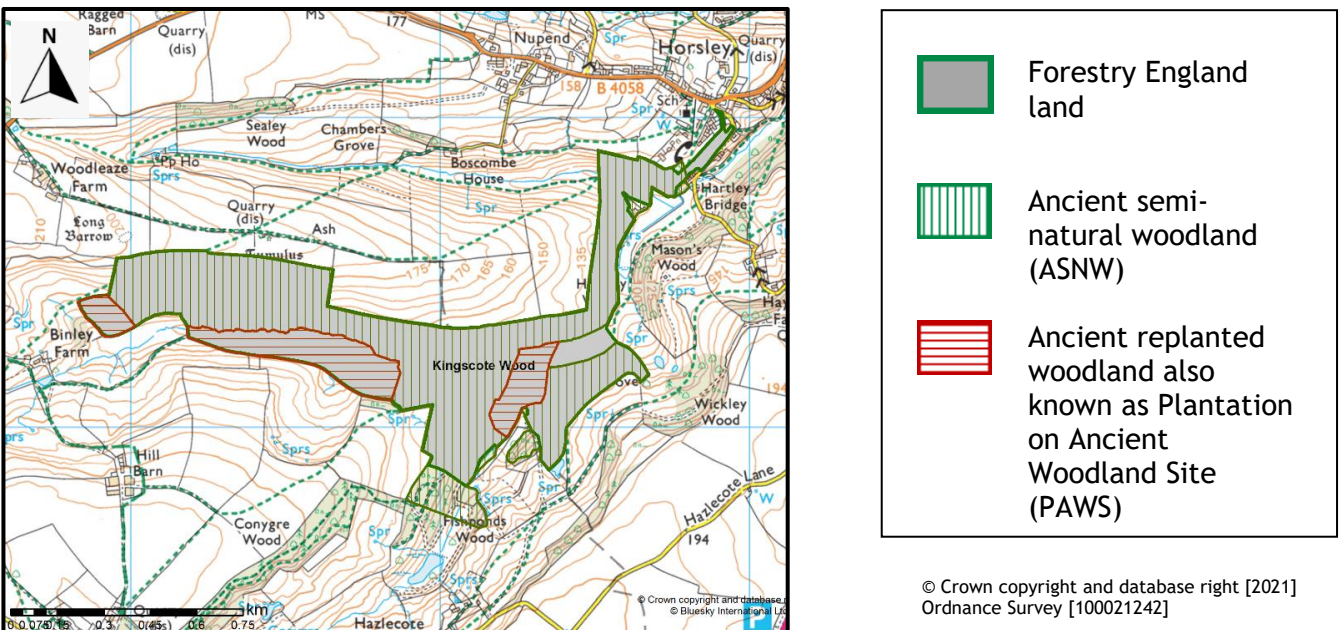


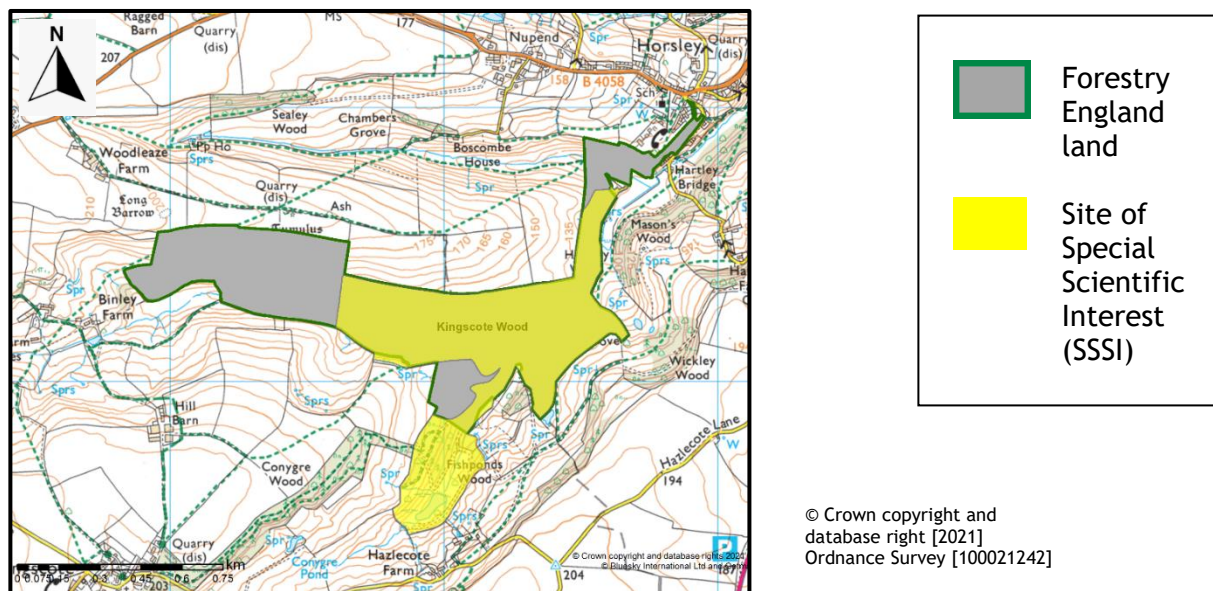
Figure 4 - Ancient semi-natural woodland and plantation on ancient woodland sites (PAWS) in Kingscote



Landscape and designations (continued)

60% of the site under Forestry England’s ownership is designated a Site of Special Scientific Interest (SSSI) currently recorded in ‘favourable condition’ - see **Figure 5**. Neighbouring Fishponds Wood also forms part of the SSSI, but is in private ownership and recorded as ‘unfavourable, recovering’.

Figure 5 - Kingscote and Horsley Woods SSSI



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SSSI citation - Natural England

COUNTY: GLOUCESTERSHIRE

SITE NAME: KINGSCOTE AND HORSLEY WOODS

DISTRICT: STROUD AND COTSWOLD

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: GLOUCESTERSHIRE COUNTY COUNCIL, Stroud District Council/Cotswold District Council

National Grid Reference: ST 831971

Area: 43.79 (ha.) 108.2 (ac.)

Ordnance Survey Sheet 1:50,000: 162

1:10,000: ST 89 NW

Date Notified (Under 1949 Act): 1966

Date of Last Revision: 1974

Date Notified (Under 1981 Act): 1984

Date of Last Revision: -

Other Information: Within the Cotswolds AONB

Reasons for Notification:

The site represents a good example of an ancient beech dominated woodland complex typical of the Jurassic limestone of the western part of the Cotswolds.

Horsley, Kingscote and Sandgrove woods are all similar, being dominated by beech *Fagus sylvatica* of various ages, with some ash *Fraxinus excelsior*, and with oak *Quercus robur* in Sandgrove. The understorey consists largely of hazel *Corylus avellana* and hawthorn *Crataegus monogyna* with beech, ash and wych elm *Ulmus glabra* regrowth. The ground flora contains abundant bluebell *Endymion non-scriptus*, dog's mercury *Mercurialis perennis*, anemone *Anemone nemorosa* and some dense patches of ramsons *Allium ursinum*.

*(Fishponds Wood has recently been clear-felled but is regenerating well with a variety of tree and shrub species including ash and elm *Ulmus procera*. Small teasel *Dipsacus pilosus* is frequent in this part of the site, and a pond adds diversity and interest to the area.)*

Landscape and designations (continued)

There are several public rights of way crossing the site (see **Figure 6**), including a bridleway running the length of the wood. Under Forestry England ownership, all of Kingscote is designated as open access.

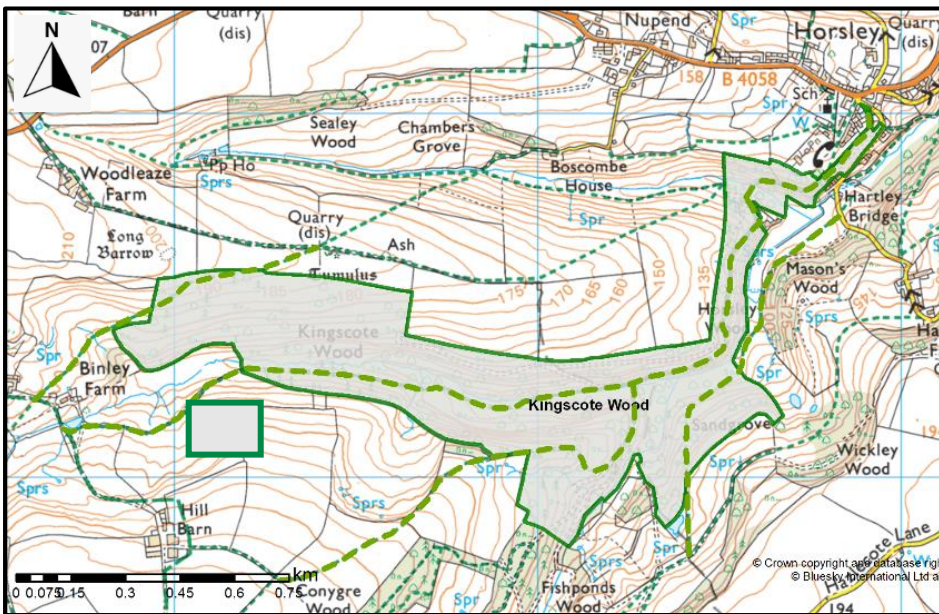


Figure 6 - Public rights of way in Kingscote



Figure 7 illustrates the three areas in Kingscote Wood which, together, have formed a registered beech seed stand since 1973 (national register reference - fsyST40-04SE). Seed has been collected in recent years by Maelor Nursery who, most recently, took 200kg of seed in 2018.

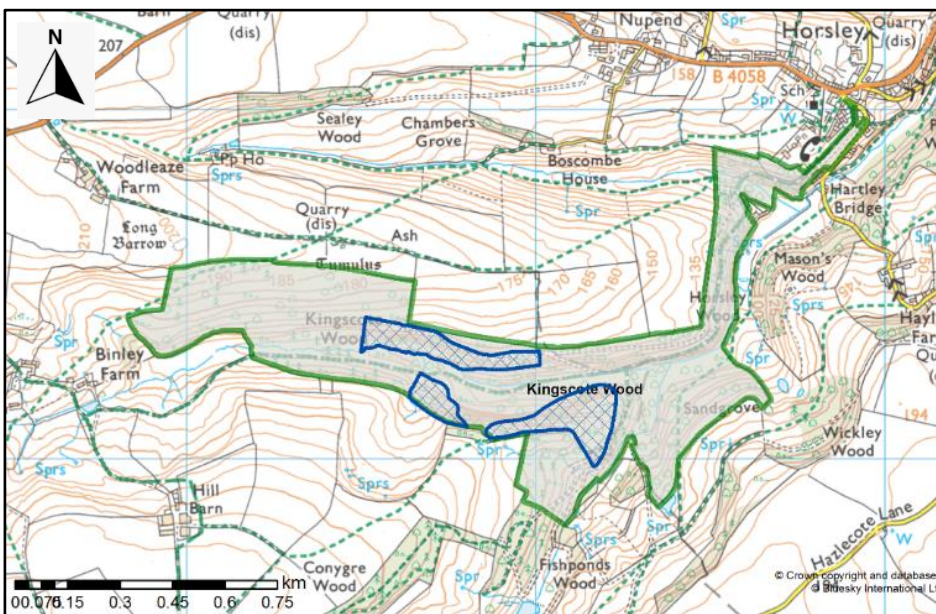
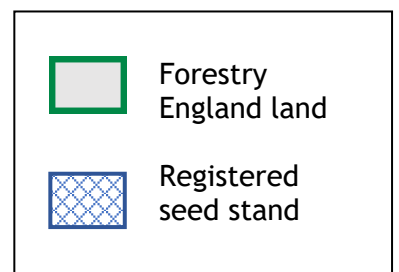


Figure 7 - Registered seed stand



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Kingscote Wood has no designated heritage features, although Gloucestershire County Council Heritage Gateway contains some very brief records, from 1930 and 1957, of Roman finds, and a mention of charcoal burning platforms. No accurate locations are provided for these records.

Conservation and biodiversity

Forestry England have managed Kingscote since 2019 (the Forestry Commission's centenary year), so we have limited, often anecdotal, records of species. However, we know that the range of habitats in this ancient beech woodland support a variety of flora and fauna, and are looking forward to surveying the wood over the coming years in order to add to our database of species records.

In July 2021, one of our volunteers carried out a moth survey at Kingscote. Moth caterpillars feed on a variety of plants and here, in one short survey, 47 species of moth were recorded, including the nationally scarce Blomer's Rivulet (**right**) and several other notable species. During a site visit on a sunny day in August, we spotted numerous butterflies of at least ten species in the open area at the bottom of the valley. Such an abundance and diversity of butterfly and moth species is a good indicator of the richness of the flora in Kingscote.



The bluebells (**below left**), dog's mercury and ramsons mentioned in the SSSI citation have been evident in Kingscote this spring. There are numerous trees of special interest, some of which were tagged by the previous owners (tagged crab apple - **below centre**), and others that were recorded in an earlier survey in 1937 (scored beech - **below right**). Unfortunately, we don't have written records of the location of all of these trees, but as we discover them, we mark them on our maps to ensure that they are protected in the future.



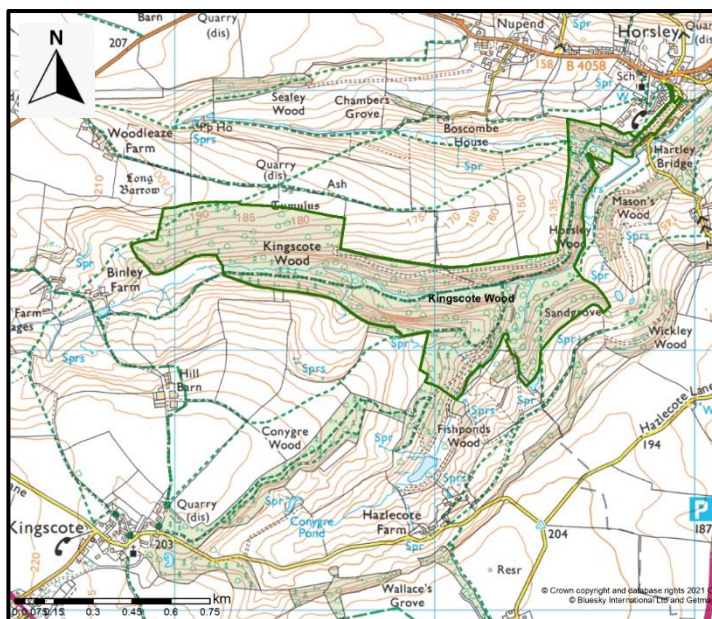
Some ridesides are relatively open, providing habitat for butterflies and other insects (**below left**), and in places, fallen trees have been left to provide deadwood (**below right**).



Water and natural flood management

Locally collected rainfall records showed that Kingscote Wood receives considerably higher rainfall than the surrounding countryside. The stream running through the centre of the wood is fed by numerous springs and streams which emerge from the underlying limestone on the surrounding hillsides (see **Figure 8**). Many of these are dry for parts of the year, flowing only after heavy rain.

Figure 8 - Map to show the many streams and springs flowing into and through Kingscote Wood



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Figure 9 - Leaky dam in Kingscote Wood

Major flood events downstream in Nailsworth and Stroud led to the instigation of the Stroud Rural Sustainable Drainage project, and in 2017, Kingscote's previous owners worked with the project to construct around 50 'leaky dams'.

These natural flood management structures often consist simply of a fallen tree held in place by metal bars (see **Figure 9**), and are positioned to slow the flow of the stream water after heavy rain, causing it to spill over into the woodland.

As well as helping to prevent the water from continuing downstream to flood towns and villages, this overflow creates valuable wet woodland habitat in Kingscote.

Other important water features in Kingscote are the tufa steps / streams - a habitat which is often important for particular plants and invertebrates. Tufa is the precipitate of calcium carbonate, which is released from spring water as pH increases when the water "issues" from the ground. There are two types of tufa habitat in Kingscote - tufa barrage formation in the main stream, and springs and issues on the woodland floor with primary wetland tufa habitat.

Current tree species and age composition

Kingscote Wood is dominated by beech (54% of species cover) and ash (23%) - see **Figures 10** and **11** - with some parts of the wood being closer to a 50/50 beech / ash mix especially the northern half of the western end. Other species found in the wood illustrate some of the management decisions made by the woodland owners during the past century.

Although the woodland is almost entirely broadleaf, there are scattered conifers. These include larch, Norway spruce (the valley bottom was at one point a Christmas tree nursery), Douglas fir and western red cedar, which were planted by the Workman family, who owned the wood for most of the 20th century, and built the cottages and the causeway at the entrance. The Duckers, who bought the wood in 1992, have made efforts to diversify - removing non-native poplar and conifers, and planting cherry, alder, walnut and oak.

Other minor components include elm, wych elm, willow and crab apple, and there is an understorey of hazel and other broadleaves in many parts of the wood.

During the survey carried out in 2020/21, ash dieback was noted in almost all subcompartments, with many recorded as having 90-100% of ash trees affected. Squirrel damage was also reported across Kingscote, with several subcompartments having at least 20-40% of the younger beech affected.

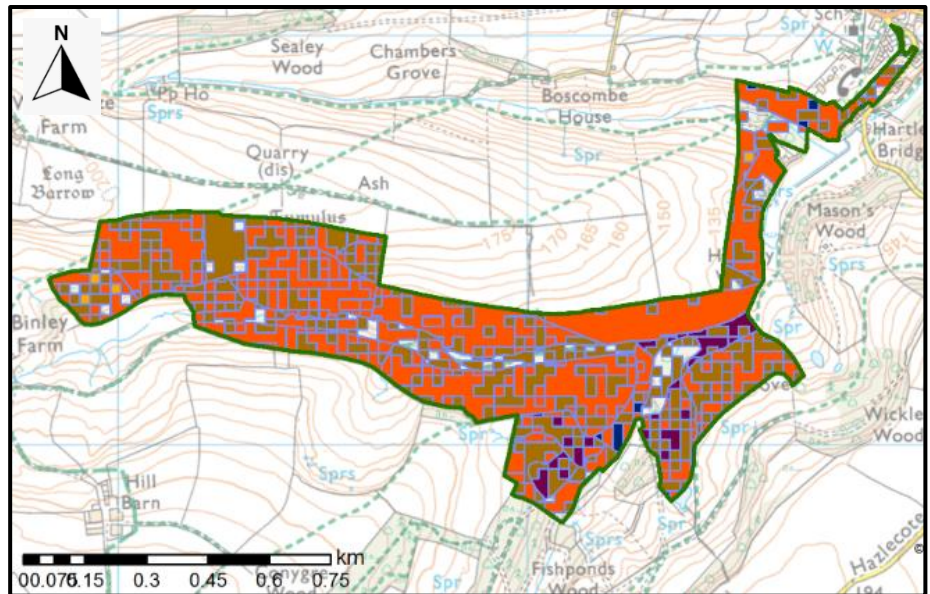
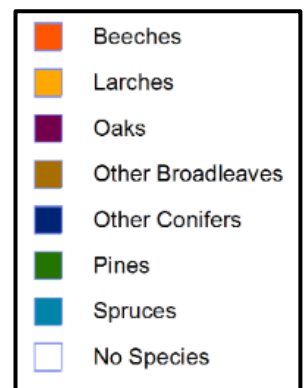


Figure 10 - Map to show distribution of different types of trees in Kingscote



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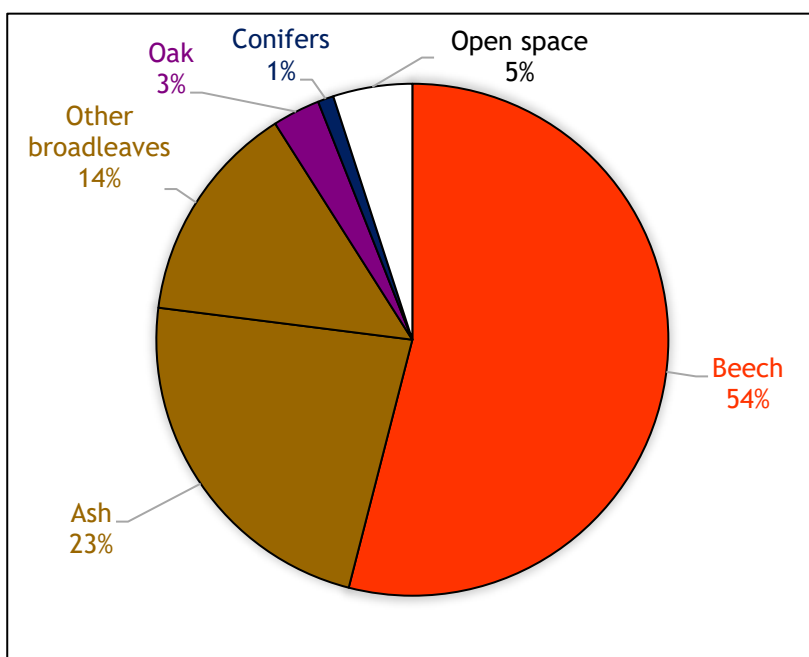
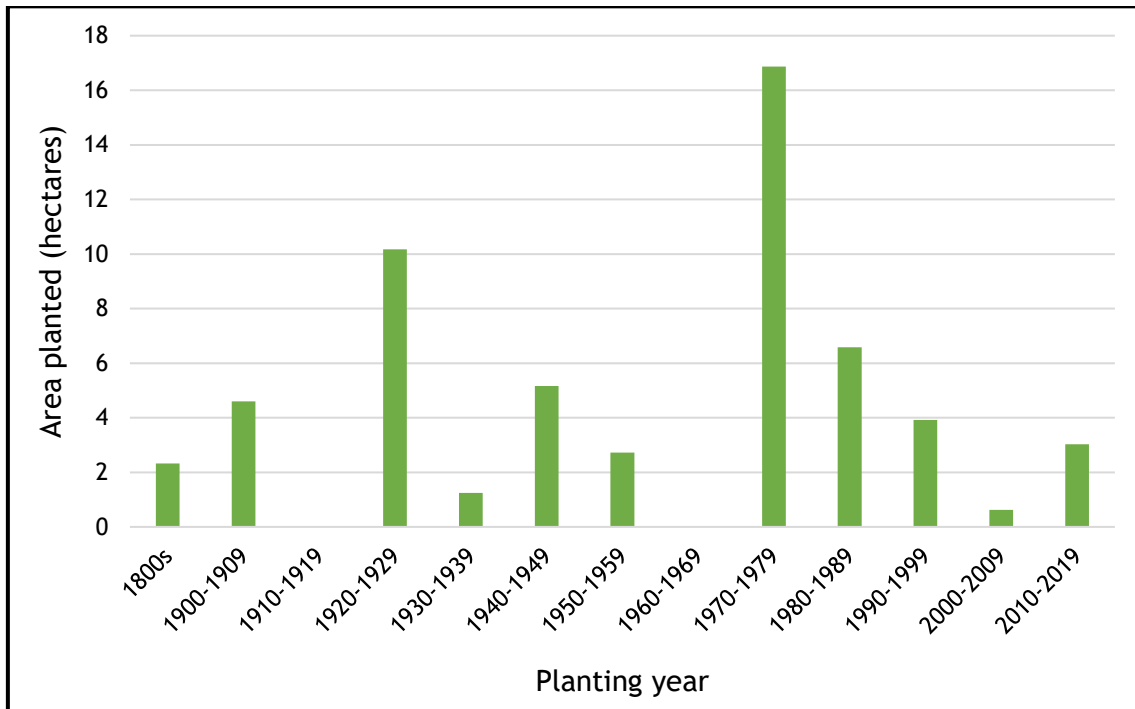


Figure 11 - Chart to show proportions of different species in Kingscote

Current tree species and age composition (continued)

In terms of age structure, there has been planting in most decades of the past 100 years (see **Figure 12**), but many of the individual stands are quite even-aged, which together with the dominance of beech, creates quite monocultural conditions in places.

Figure 12 - Chart to show area (in hectares) of Kingscote Wood that was planted in each decade



Section 3 - What we'll do

Our plans for Kingscote

Having acquired Kingscote so recently, this ten year plan period will be the time when we really get to know the wood and its species and opportunities. We'll gain a better understanding of the impacts of squirrel damage and ash dieback and will investigate potential ways to increase Kingscote's resilience to these and other anticipated change - see [page 32](#) for our ash management plan. Our plans, which are set out over the next pages, are flexible - we will need to adapt over time, for example if we find important species that require particular management, habitats or food plants.

Kingscote is ecologically important, but has produced fine quality timber for decades so, as explained in the drivers on [page 6](#), management needs to balance biodiversity and productivity. While one does not exclude the other, we have identified areas of the wood which will be managed with wildlife at the forefront of our mind, and others where productivity will be the priority.

This doesn't mean that productive areas will experience extensive forest operations or will be lacking in biodiversity benefits - we will use low impact silvicultural systems at an appropriate scale for the site, and work will always be preceded by consultation with our ecologist who will identify any potential opportunities for species / habitat enhancement.

Equally, it doesn't mean that the 'wildlife areas' will be neglected - far from it. Some areas will be managed under 'minimum intervention' which benefits species that do well under low levels of disturbance, but others may be coppiced or cleared regularly to create mosaics of open space and woodland of varied age and structure.

Productive areas will be divided into ten thinning coupes and a long-term contract established, so that Kingscote is worked by an experienced contractor who will develop a relationship with Forestry England and with Kingscote - together we can make ongoing reactive decisions about management. At the moment, we anticipate that one coupe may be thinned each year, or two coupes in alternate years, in order to continue with regular small-scale intervention, but this may change dependent on what is in Kingscote's best interests as time goes by. Work in the wildlife areas (coppicing etc) will be arranged outside this contract, and carried out on an as-needed basis on the advice of our ecologist.

Two-thirds of the woodland is designated as a SSSI for its W12 and W8 woodland (see [page 9](#)), and the rest of the site is not noticeably different from the designated area, meaning that the management decisions made for the SSSI are appropriate across the whole of Kingscote. This is reflected in the management objectives and actions (see [pages 18-23](#)) which apply across both the designated and undesignated area. We therefore anticipate that this forest plan serves as the SSSI management plan as well, rather than producing two documents which would inevitably overlap considerably. Further detail specific to our management of the SSSI is on [pages 27-31](#).

Another important feature of Kingscote Wood is the tufa streams - see [page 33](#) for our plans relating to their management.

Our analysis and concept for Kingscote Wood is shown on [pages 16](#) and [17](#).

Kingscote Wood

The largest section of the wood, appropriately known as 'Kingscote Wood', is a steep-sided valley, dominated by beech and ash with occasional conifers dotted along the north facing slope ❶.

Large proportions of the beech were planted in the 1920s, 50s and 70s, and have been managed for the production of high quality timber. Some very large old trees (probably from around 1830) are part of a registered seed stand ❷, from which seed has been collected by tree nurseries for many years. Younger beech stands are deteriorating due to squirrel damage, and much of the ash is suffering from dieback. The eastern end of the riparian (stream) corridor running along the bottom of the valley ❸ is currently mostly open, but was planted with alder and cherry in 2014, which is growing quickly. The western end of the stream ❹ is lined with more mature trees, and has several leaky dams (natural flood management structures). The western half of this area is outside the SSSI.

Horsley Wood

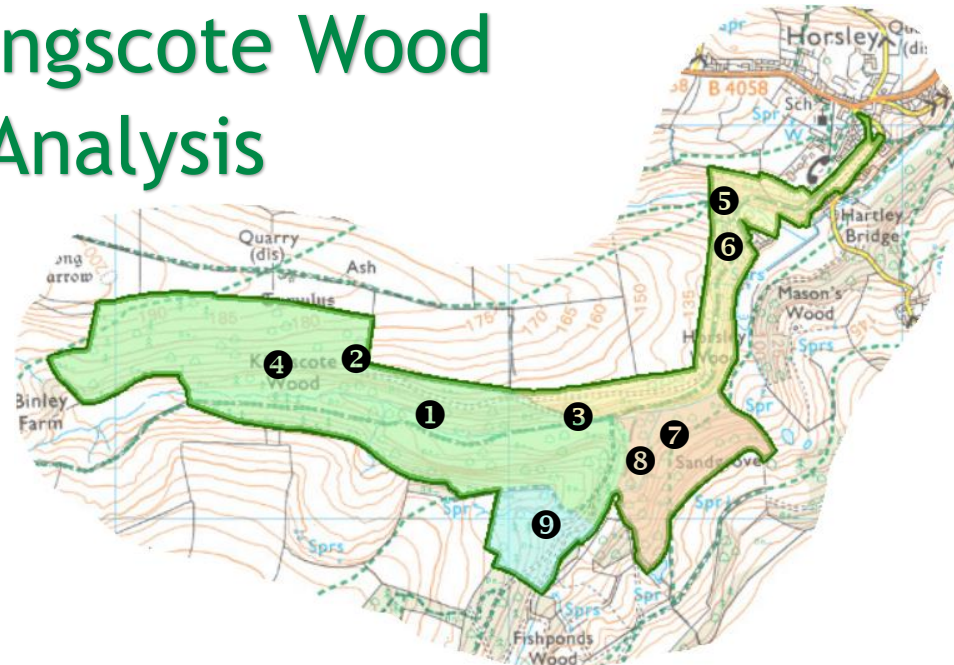
Vehicular access from Horsley village crosses a potentially wildlife-rich gully ❺ with nettles, open space and scrub, on a causeway of unknown construction. The northwest corner is a steep bank with beech, sycamore and yew, where access will be challenging.

The gate into the main part of the wood marks the beginning of the SSSI, and the track passes through an area of 1923 beech and ash, some of which was cleared recently due to dieback ❻, opening up an area around one of the important limestone tufa streams.

The strip of land where power lines were recently moved underground has vigorous hazel coppice regrowth.

In Horsley, and elsewhere in the wood, are several small 'quarries' - areas where stone has previously been removed for road construction, leaving open sunny habitat, that favours delicate herbs that can grow without being shaded out.

Kingscote Wood - Analysis



Sandgrove

The Sandgrove area, which is all within the SSSI, has two main parts - the wet / floodplain area in the bottom of the valley, where oak and ash have been planted in recent years ❷, and the slopes up to the southeastern boundary, which are dominated by beech and ash of various ages. The Douglas fir on the edge of the valley bottom is the only significant remaining stand of conifers ❸. There are several very large, old trees along the boundaries, including some uncommon species such as crab apple and elm.

Nurbridge

The Nurbridge area, where only the eastern side is within the SSSI, feels more natural and less intensively managed than the rest of the wood. An area was planted with oak and cherry around 2010 - ❹ the cherry is thriving, but the oak has been squirrel damaged. There are pockets of open space, hazel coppice, scrub and some very big old beech, oak and other broadleaves scattered throughout the area.

Potentially productive areas across the wood have been divided into thinning coupes to be thinned approximately every ten years. Final crop trees (the best specimens which we expect to thrive for decades to come) will be identified and marked. Thinning will favour these finest trees and create gaps for natural regeneration.

Seed stands will be protected during forest operations, and seed will be offered to nurseries to ensure that the legacy of the fine quality Kingscote beech is continued - both on site and elsewhere.

We will monitor **squirrel and deer damage** in the wood and adapt our management as needed e.g. using fencing to prevent deer damage to coppice regeneration.

Dead and dying ash will be treated in various ways throughout the wood - some will be left to provide wildlife habitat and potentially dieback-resistant offspring, Small groups of ash may be removed, leaving open space, some of which will be planted with new trees. We will continue to observe the ash on site, looking out for, and encouraging, any that appear to be more tolerant to dieback.

The **northwest corner** ① of Horsley will be a thinning coupe - we will maintain the yew / holly understorey which is quite unusual in Kingscote.

The **gully** ②, **quarries** and the **area where the power lines were** ③ will be kept as open as possible to provide a variety of wildlife habitats. The ecologist will advise when and how to cut these areas dependent on which species are found.

Tufa streams ④ in Horsley and elsewhere will be allowed to spread out of their channels and woody debris will be left to create random changes in flow. Care will be taken to avoid tufa areas during forest operations.

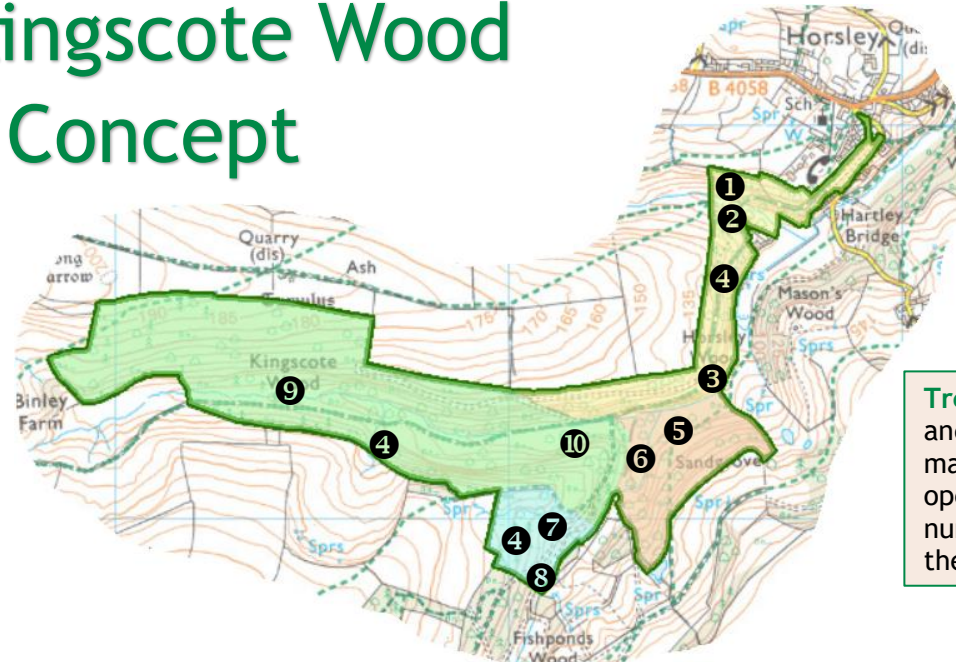
We will weed around the **recently planted oak and ash** ⑤ in the eastern end of the valley, removing dead trees and tubes as necessary.

The **Douglas fir** ⑥ will be thinned when appropriate, developing it into a mature crop that adds structural and visual diversity to the otherwise predominantly broadleaf woodland.

Trees of special interest in Sandgrove and elsewhere will be marked on our maps, and care will be taken during operations to protect these and the numerous other valuable veterans within the wood.

We will respace the **young cherry** and remove the **dead young oak** ⑦, possibly planting in the gaps when we see how much space is created.

Kingscote Wood - Concept



The **western end of the stream** ⑨ will be managed towards 50% open / 50% dappled shade. In the **eastern end** ⑩, the young trees will be coppiced on a ten year cycle, to maintain the valuable sunny, open habitat. Leaky dams will be checked every five years and replaced towards the end of the 2020s if needed.

The **less managed, wilder area** ⑧ at the southern end of Nurbridge will be managed as minimum intervention to benefit species that do well under low levels of disturbance. There will be no operations here unless needed for safety reasons.

Forest plan objectives	Actions	Economy	Environment, nature, history	People	Monitoring
<p>1. Sustainability</p> <p>We will practice exemplary forest management in Kingscote Wood - endorsed by our continued certification under the UK Woodland Assurance Standard.</p>	<p>Actions to achieve this objective will include:</p> <p>1.1 appropriate methods and scale of operations - taking into account access restrictions e.g. wet ground, riparian areas, causeway of unknown construction / strength for lorries, potential presence of European Protected Species (EPS);</p> <p>1.2 always considering, and trying to build on, the legacy of previous exemplary silviculture - continuing to manage Kingscote with as much attention to detail as we can;</p> <p>1.3 ensure that forest management work enhances the internal and external landscape;</p> <p>1.4 survey of the site to locate / map all recent planting (since 1990s), removal and recycling / disposal of unneeded tubes, documentation of management requirements of these young crops;</p> <p>1.5 internal and external consultation and communication of the plan, including consulting with Natural England to agree appropriate management within the SSSI.</p>	✓	✓	✓	<p>1.1 - 1.3 to be monitored by the beat team through:</p> <ul style="list-style-type: none"> • ongoing observation • site planning process • contract management <p>and by the forest planner through the forest plan review process</p> <p>1.4</p> <ul style="list-style-type: none"> • to be started by the planner when writing the plan, then completed by the beat team within five years <p>1.5</p> <ul style="list-style-type: none"> • planner to lead on consultation at time of writing the plan • beat team to maintain communication as needed during the lifetime of the plan e.g. with neighbours

Forest plan objectives	Actions	Economy	Environment, nature, history	People	Monitoring
<p>2. Resilience</p> <p>We will encourage the gradual diversification of species and age structure, in order to ensure that Kingscote thrives in the face of pests, diseases and climate change.</p>	<p>Actions to achieve this objective will include:</p> <p>2.1 canopy gaps (no greater than 0.25 hectare) such as those created when felling diseased ash, will be left to regenerate naturally, and others may be planted with a variety of native site-appropriate species that are as resistant to pests, diseases and climate change as possible, in order to encourage diversification of species and structure; planting will be kept to a minimum within the SSSI (and only of site-appropriate native species) - the preference will be for natural regeneration;</p> <p>2.2 monitoring of squirrel and deer populations and damage, and appropriate adaptation of management e.g. use of deer fencing;</p> <p>2.3 we will continue to observe the ash on site, looking out for, and encouraging, any that appear to be tolerant to dieback, and leaving some dead and dying ash in situ to provide habitat and potentially disease-resistant offspring (see page 32 for further detail of how we will manage ash at Kingscote).</p>	✓	✓	✓	<p>2.1</p> <ul style="list-style-type: none"> to be implemented by the beat team through the site planning process and monitored by the planner through the review process <p>2.2 - 2.3</p> <ul style="list-style-type: none"> to be monitored by the beat team and planner through ongoing observation

Forest plan objectives	Actions	Economy	Environment, nature, history	People	Monitoring
<p>3. Biodiversity</p> <p>The rich ecological environment of both the SSSI and the rest of the wood will be nurtured, and the diversity of habitats and species increased through management, including coppicing and provision of temporary / permanent open space, and standing and fallen deadwood.</p>	<p>Actions to achieve this objective will include:</p> <p>3.1 trees of special interest (TSIs) will be marked on our maps; care will be taken during operations to protect them, and numerous other large, old, significant trees;</p> <p>3.2 certain areas will be managed for wildlife - some will be coppiced periodically on the advice of the ecologist, creating mosaics of temporary open space, while other areas will be treated as minimum intervention;</p> <p>3.3 parts of selected ridesides and other areas will be cleared (less than 0.25ha) to create and maintain open space to benefit invertebrates;</p> <p>3.4 conifers will be removed from the SSSI if they are regenerating profusely; sycamore will not be allowed to form more than 15% of canopy cover within the SSSI;</p> <p>3.5 in places where it is safe to do so, dead and dying ash (and other standing or fallen dead trees) will be left in situ, in order to retain habitat and increase deadwood;</p> <p>3.6 surveys of key protected species will be undertaken in order to inform future management decisions.</p>		✓		<p>3.1 - 3.5 to be discussed / initiated at the time of writing the plan and decisions recorded by the planner</p> <p>then implemented by the beat team with ongoing advice / informal monitoring by the ecologist</p> <p>followed by more formal monitoring by the forest planner through the forest plan review process</p> <p>3.6 to be carried out / commissioned by the ecologist as opportunities arise throughout the plan period</p>

Forest plan objectives	Actions	Economy	Environment, nature, history	People	Monitoring
<p>4. Productivity</p> <p>Kingscote is a working wood - we will continue with small-scale timber production, and work with nurseries to make best possible use of the registered seed stands.</p>	<p>Actions to achieve this objective will include:</p> <p>4.1 the site has been divided into ten thinning coupes, each of which will be thinned on an approximate ten year cycle, with operations spread throughout the wood at an appropriately small scale; a long-term contract will be established to achieve this; final crop trees will be identified and favoured during thinning; beat team will decide which coupes to cut each year - probably one coupe each year or two coupes in alternate years; there will be one area of ash clearfell, and small groups of up to 0.25 hectares may be felled if appropriate to create gaps in the canopy for planting or natural regeneration;</p> <p>4.2 the health of trees planted since 1998 will be assessed and action taken where necessary e.g. weeding around the young trees in the eastern end of the stream corridor, and removal of tree shelters where they are no longer needed across the site;</p> <p>4.3 annual observation of the seed stands in June / July to see whether there is likely to be a good crop of seed, followed by contact with the Forestry England Plant and Seed Supply team and / or private nurseries to arrange seed collection.</p>	✓	✓		<p>4.1 - 4.2</p> <ul style="list-style-type: none"> to be discussed / initiated at the time of writing the plan, implemented by the beat team and monitored by the planner through the review process <p>4.3</p> <ul style="list-style-type: none"> to be implemented by the beat team

Forest plan objectives	Actions	Economy	Environment, nature, history	People	Monitoring
<p>5. Water</p> <p>Careful management of Kingscote’s streams and springs provides constantly changing habitat and conditions, and the ‘leaky dams’ offer natural flood management, benefiting residents of nearby towns.</p>	<p>Actions to achieve this objective will include:</p> <p>5.1 opportunities will be taken to fell occasional trees along the western end of the stream corridor - working towards approximately half and half open / dappled shade; fallen trees will be left in the stream areas to encourage random flows creating wet areas;</p> <p>5.2 recently planted trees in the east end of the valley bottom will be coppiced in sections on a ten year cycle in order to keep the area around the stream open;</p> <p>5.3 annual check of the natural flood management (leaky dam) structures and communication with Stroud District Council; probable replacement of some of the structures in 2026/27;</p> <p>5.4 tufa streams are marked on our maps and care will be taken when carrying out forest operations nearby - see page 33 for further detail of how we will protect the tufa at Kingscote.</p>		✓	✓	<p>5.1 - 5.4 to be implemented by the beat team through:</p> <ul style="list-style-type: none"> • ongoing observation • site planning process • contract management <p>and monitored by the forest planner through the forest plan review process</p>

Forest plan objectives	Actions	Economy	Environment, nature, history	People	Monitoring
<p>6. Community</p> <p>Kingscote is valued and enjoyed for low impact recreational activity by the local community and other users including walkers and horse riders.</p>	<p>Actions to achieve this objective will include:</p> <p>6.1 monitoring of potential issues e.g. fly tipping and mountain bike activity - speak with neighbours / put up posters if necessary;</p> <p>6.2 clear sides of public rights of way annually, or when needed;</p> <p>6.3 look for opportunities to work with community groups / volunteers to carry out species / habitat surveys.</p>		✓	✓	<p>6.1 - 6.2 to be implemented by the beat team through:</p> <ul style="list-style-type: none"> • ongoing observation • site planning process • contract management <p>and monitored by the forest planner through the forest plan review process</p> <p>6.3 beat team and ecologist to facilitate opportunities</p>

Our management prescriptions for Kingscote

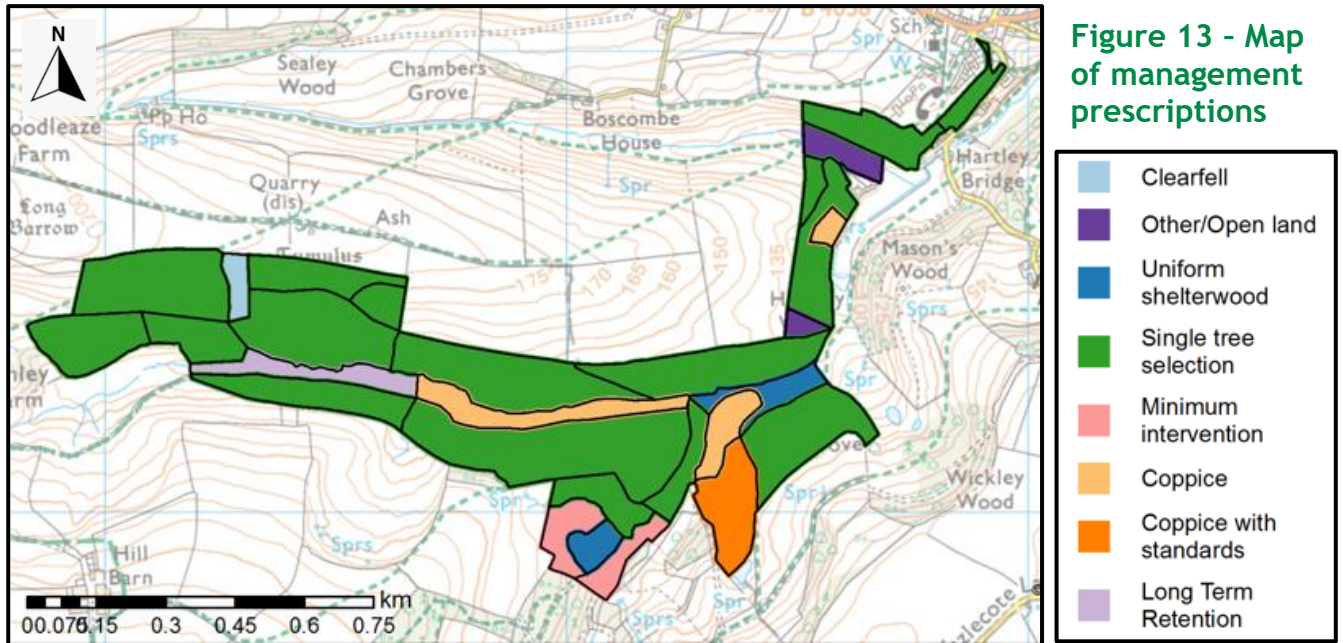


Figure 13 - Map of management prescriptions

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Clearfell - one small area, currently dominated by large dead and dying ash trees, will be clearfelled (**Action 4.1**), with advice from our ecologist as to the likelihood of bat roosts. This clearfell provides an opportunity to diversify the species within Kingscote (**Action 2.1**) - restock will be with a mixture of site-appropriate native broadleaf species, possibly including wild cherry, hornbeam, wild service, wych elm and willow.

Other / open land - the gully at the entrance to the site, and the area where the power lines were put underground, will be maintained as open / scrub, to benefit wildlife (**Action 3.3**). Cutting regimes will depend on which species are found during the plan period, and will be advised by the ecologist.

Uniform shelterwood - we will tend to the areas of relatively recent planting, carrying out weeding, respacing and tree tube removal when appropriate, in order to develop these into productive future crops (**Action 4.2**).

Single tree selection - the majority of the site has been divided into thinning coupes, which will be thinned on an approximately ten year cycle, to favour final crop trees and to encourage natural regeneration, working towards a continuous cover approach (**Action 4.1**). Treatment of ash will vary across the site (**Action 2.3**).

Minimum intervention - no work will be done in this area in the south of the site, unless needed for safety reasons. This should benefit species which thrive in an undisturbed environment (**Action 3.2**).

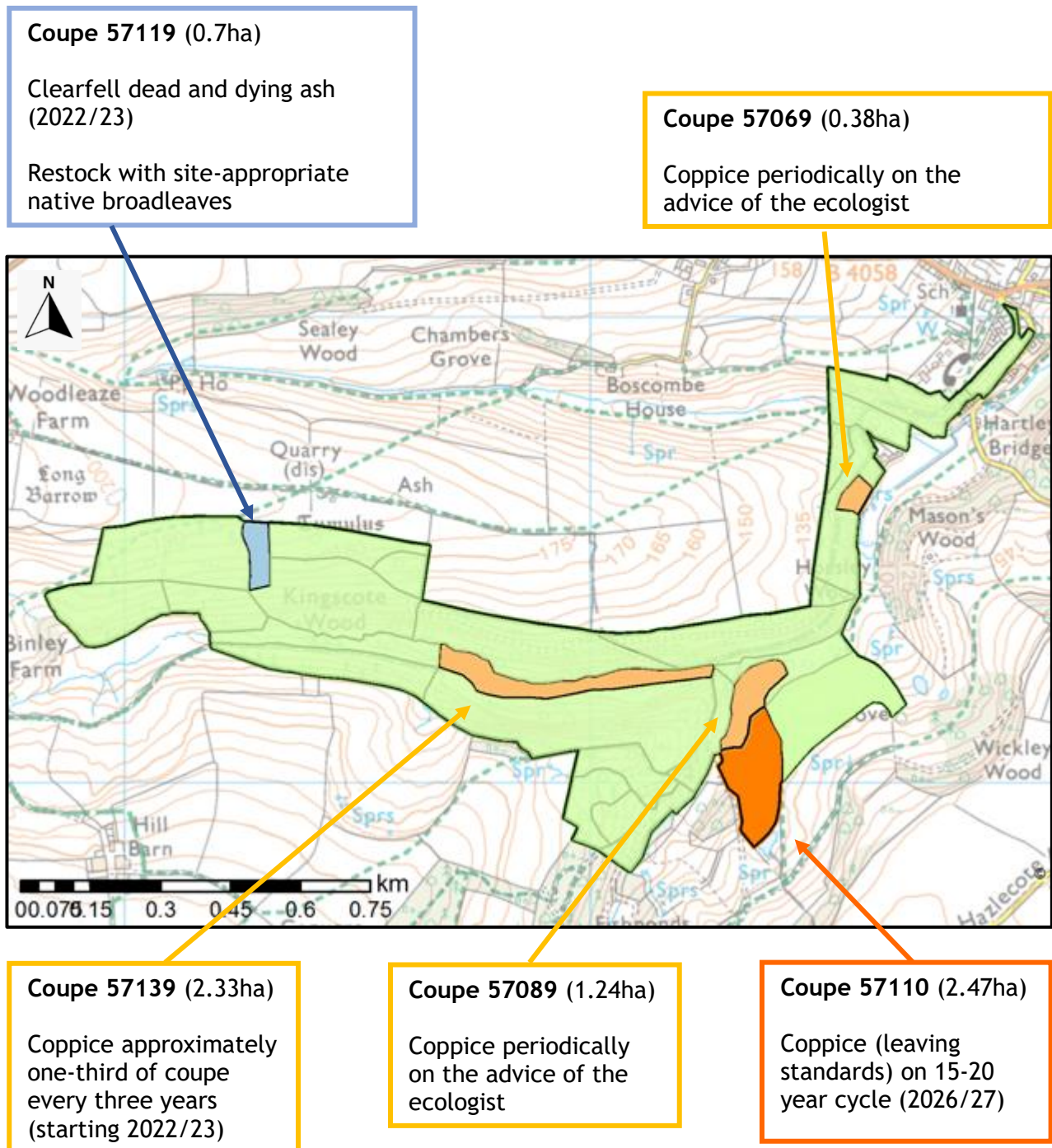
Coppice - in order to benefit butterflies and other species, much of the stream corridor will be coppiced in sections, creating a mosaic of open space and different aged regrowth (**Action 5.2**).

Coppice with standards - this area will be coppiced, but several large trees (standards) left among the coppice. This provides temporary open space, but with added habitat and structure.

Long-term retention - occasional trees will be removed from the western end of the stream corridor to create an environment of open space and dappled shade. Fallen trees will be left in situ to assist with natural flood management and development of wet woodland (**Action 5.1**).

Felling / restock plan (2021-2031)

Figure 14 - Map to show clearfell and coppice areas in Kingscote in this plan period



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At the moment, we don't anticipate carrying out clearfells in future plan periods, but this decision may be influenced by the appearance of new pests and diseases, and will be reviewed at ten year intervals when the forest plan is renewed.

Future habitats and species

We will not initiate any major changes in species through forest operations, but will look for opportunities to build resilience, productivity and biodiversity by tweaking the species composition.

According to the National Vegetation Classification (NVC), Kingscote is mostly made up of W12 and W8 woodland. The box to the right (together with the more detailed descriptions of the NVC types) gives an indication of the species that could occur naturally on the site. We may use these in conjunction with our understanding of the character of Kingscote and the surrounding area in order to inform species choice.

The clearfell coupe will be restocked with site appropriate broadleaf species, and thinning coupes will be worked to enable natural regeneration, possibly supplemented by planting (again with appropriate native broadleaves) if necessary.

The few remaining conifers will be thinned along with the broadleaves. We are not actively trying to remove conifers as there are so few present, which continue to add structural and visual diversity to the woodland as a whole.

We will probably need to address the dominance of ash in light of ash dieback, and expect that sycamore may fill the gaps left by dead ash. Sycamore will need to be controlled within the SSSI so that it doesn't become dominant, and where it does grow, it is likely to be affected by squirrel damage, so we may need to encourage alternative species.

We will seek advice from Natural England as to which species are acceptable replacements for ash within the SSSI, and will adapt our plan over the coming years accordingly.

W8 - *Fraxinus excelsior* - *Acer campestre* - *Mercurialis perennis* woodland - characterised by ash, field maple, hazel, lime, elm and sycamore.

W12 - *Fagus sylvatica* - *Mercurialis perennis* woodland - dominated by beech, with ash, sycamore and oak colonising the gaps.

Section 4 - More detailed management considerations for Kingscote

Management in the SSSI

The table below shows how the targets from the Natural England (NE) Favourable Conditions Table (2014) for the Kingscote SSSI tie into our forest plan proposals.

Attribute	Site-specific targets (NE, 2014) - all relate to the W12 and W8 woodland in Kingscote SSSI <i>(targets which are no longer relevant are in italics and brackets)</i>	Our actions and management proposals
Habitat extent	No loss of ancient semi-natural stands. At least current area of recent semi-natural stands maintained, although their location may alter. No loss of ancient woodland.	There will be no change in the extent of ancient and semi-natural woodland.
Structure and natural processes	Understorey (2-5m) present over at least 20% of total stand area.	There will be no change in how we manage the understorey, which is currently at least 20% in most of the stands within the SSSI.
	Canopy cover present over 30-90% of stand area.	Canopy cover will be more than 30%.
	At least three age classes spread across the average life expectancy of the commonest trees.	There is a variety of age classes across Kingscote - which we will maintain and enhance through occasional cutting of groups of trees, which will be allowed to regenerate naturally or be planted if necessary - Action 4.1 .
	Some areas of relatively undisturbed mature / old growth stands or a scatter of large trees allowed to grow to over-maturity / death on site (e.g. a minimum of 10% of the woodland or 5-10 trees per hectare).	Mature / old trees will be protected, and future veterans identified - Action 3.1 , and some areas will be treated as minimum intervention - Action 3.2 .
	A minimum of 3 fallen lying trees >20cm diameter per hectare and 4 trees per hectare allowed to die standing.	Deadwood will be increased across the site - at least partly as a result of ash dieback - Action 3.5 .

Continued...

Attribute	Site-specific targets (NE, 2014) - all relate to the W12 and W8 woodland in Kingscote SSSI (<i>targets which are no longer relevant are in italics and brackets</i>)	Our actions and management proposals
Composition	<p>At least 95% of cover in any one layer of site-native or acceptable naturalised species. Minimum levels of particular native tree / shrub species.</p> <p>(Advice from Paul Hackman - Natural England 28.06.21 via email: "I would suggest removing pole stage sycamore to prevent it reaching seed bearing age. The guidance recommends keeping sycamore under 15% in the canopy to prevent it becoming dominant.")</p>	<p>Apart from a few scattered conifer trees, and one small stand of Douglas fir, there are very few non-native species on site. A patch of laurel in Sandgrove will be removed, the conifers will be allowed to remain (unless regenerating prolifically) in order to provide diversity, and sycamore will be kept to a maximum of 15% of canopy cover - Action 3.4. However, we will need advice from NE as to which species are acceptable replacements for ash within the SSSI.</p>
	<i>(There are areas of poplars in the SSSI, which are being removed)</i>	<i>(Poplars removed by previous owners and replaced with native species)</i>
	Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.	Squirrel and deer damage will be monitored and action taken if necessary - Action 2.2 . Ash trees affected by dieback will be treated in a variety of ways - Action 2.3 and 3.5 .
Indicators of local distinctiveness	80% of ground flora cover referable to relevant NVC community. Lesser teasel (<i>Dipsacus pilosus</i>) is a quality indicator.	We will carry out surveys of flora and fauna over the ten year plan period in order to inform our management - Action 3.6 .
	Maintain tufa streams.	Action 5.4 .
	Maintain wet flushes around streams for molluscs and Diptera.	Wet areas around streams will be encouraged - Action 5.1 .
Regeneration potential	Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy cover density over a ten year period.	Natural regeneration will be encouraged in gaps e.g. those created when ash dies and falls - Action 2.1 and 4.1 . Recently planted trees will be surveyed and their requirements met - Action 4.2 .
	<i>(Replanting of agreed native species acceptable where blocks of non-native trees have been removed.)</i>	<i>(Blocks of non-native trees have been removed - by the previous owners - and replaced with native species including oak, ash, cherry, alder)</i> If we do carry out any planting, it will be with site-appropriate native species / provenances - Action 2.1 .

Management in the SSSI (continued)

Operations requiring Natural England's consent (formerly known as 'operations likely to damage the special interest' (OLDs) or 'potentially damaging operations' (PDOs))

As part of a SSSI notification, Natural England provides a list of operations requiring their consent. None of the listed operations can be carried out or permitted without Natural England's prior written consent or the consent of another public body (provided that the other body has formally consulted Natural England first). This applies where a person wishes to undertake any of these operations themselves or plans to allow others to carry them out.

It is usually possible to carry out many of these operations in certain ways or at specific times of year, or on certain parts of the SSSI, without damaging the features of interest. Natural England can provide early advice and, where appropriate, issue a consent. In certain circumstances it will not be possible to consent to these operations, because they would damage the features of interest. Where possible Natural England will suggest alternatives which would enable a consent to be issued.

Many of the types of operations below are covered in the forest plan, so the assumption is made that if the forest plan is approved by Natural England, then the operations are approved also. Below are references to the actions where these operations are described, and additional notes for operations not covered already in the forest plan.

The list of operations requiring consent at Kingscote is below:

Ref	Type of operation	Agreed with Natural England - for the duration of the plan
2	The introduction of grazing and changes in the grazing regime (including type of stock, intensity or seasonal pattern of grazing and cessation of grazing).	No grazing planned during this plan period at Kingscote.
3	The introduction of stock feeding and changes in stock feeding practice.	No stock feeding planned during this plan period at Kingscote.
6	Application of pesticides, including herbicides (weedkillers).	Glyphosate may be applied to non-native invasive or noxious weeds if needed - ecologist will be consulted.
7	Dumping, spreading or discharge of any materials.	No dumping, spreading or discharge planned during this plan period at Kingscote (for road grading, see 21 below).
8	Burning.	No burning planned during this plan period at Kingscote.
9	The release into the site of any wild, feral or domestic animal*, plant or seed.	No release of animals planned during this plan period at Kingscote.
10	The killing or removal of any wild animal*, other than pest control.	No removal of animals planned during this plan period at Kingscote.

Ref	Type of operation	Agreed with Natural England - for the duration of the plan
11	The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, dead or decaying wood, moss, lichen, fungus and leafmould.	<p>Certain areas of woodland will be cut to create mosaics of temporary open space - Action 3.2.</p> <p>Selected ridesides will be cleared to benefit invertebrates - Action 3.3.</p> <p>Thinning will be carried out on a ten year cycle, and one small area will be clearfelled - Action 4.1.</p> <p>Some trees may be cut for health and safety reasons.</p> <p>All the above actions will be preceded by consultation with the ecologist.</p> <p>Operations will be carried out at appropriate scale and using methods appropriate to the site - Action 1.1.</p>
12	Changes in tree and/or woodland management+.	<p>The management to be implemented during this plan period is similar to previous management, and will consist of thinning operations and some coppicing - see 11 above.</p> <p>Planting (of site-appropriate native species) may take place to supplement natural regeneration where needed - Action 2.1.</p>
13a	Drainage (including the use of mole, tile, tunnel or other artificial drains).	No drainage operations planned during this plan period at Kingscote, apart from maintenance of existing culverts.
13b	Modification of the structure of watercourses (eg streams or ditches), including their banks and beds, as by re-alignment, re-grading and dredging.	The only modification of watercourses will be as a result of fallen trees and woody debris being left in situ in order to protect and encourage tufa formation - Action 5.1 .
13c	Management of aquatic and bank vegetation for drainage purposes.	No management of bank vegetation planned for drainage purposes during this plan period at Kingscote.
14	The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).	No changing of water levels planned during this plan period at Kingscote.
15	Infilling of ditches or marshes.	No infilling of ditches planned during this plan period at Kingscote.

Ref	Type of operation	Agreed with Natural England - for the duration of the plan
16a	The introduction of freshwater fishery production and/or management and changes in freshwater fishery production and/or management, including sporting fishing and angling.	No fishery activity planned during this plan period at Kingscote.
20	Extraction of minerals, including topsoil and subsoil.	No extraction of minerals planned during this plan period at Kingscote.
21	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.	Forest roads and rides may need to be reinstated, with the addition of limestone, following forestry operations. The ecologist will be consulted.
22	Storage of materials.	No storage of materials planned for this plan period at Kingscote.
23	Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.	No erection of structures or engineering works planned during this plan period at Kingscote - apart from road grading - see 21 above.
26	Use of vehicles or craft likely to damage or disturb features of interest.	Machines to be used for thinning, coppicing and rideside management may include harvester, forwarder and tractor. Operations will be preceded by a consultation process which will involve the ecologist, and will minimise ground damage by being implemented at an appropriate scale and time of year - Action 1.1 .
27	Recreational or other activities likely to damage woodland habitat.	No expansion or development of recreational activities planned for this plan period at Kingscote.
28	Introduction of game management and changes in game management and hunting practice.	No game management planned for this plan period at Kingscote.
<p>* 'animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate. + including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.</p>		

Management of ash in Kingscote

Ash dieback, also known as chalara, is a highly destructive disease of ash trees, caused by a fungus called *Hymenoscyphus fraxineus*. First identified in the UK in 2012, it has now spread across the country, and is rife in Kingscote, where ash is one of the most common and most important species for timber and for wildlife.

Our management of ash will be influenced by a number of considerations including:

- Ash suffering from dieback becomes brittle and unstable, meaning that it is too risky for an operator to cut it down with a chainsaw - it has to be felled with a harvester machine. However, some parts of Kingscote are too inaccessible and / or fragile for a harvester.
- Ash may survive with dieback for several years and, during this time, continue to provide habitat for a range of other species. Ash which dies in the wood will also provide deadwood, which produces humid, protected niches for invertebrates, plants and fungi, which in turn help form woodland soil and support other plant, bird and animal populations. However, there are so many patches of ash in Kingscote that we cannot simply let it all die.
- Kingscote is a working wood, and has produced high quality timber for more than a century. Much of the older ash was planted with this purpose in mind, and we must not let it go to waste, but take opportunities through our thinning programme to remove ash which is ready for felling in order to continue the sustainable cycle of timber production.

To reduce the impact of ash dieback, Forestry England is guided by the following principles (from our Tree Health and Biosecurity Policy (2020)):

- maintain as far as possible the environmental values and benefits associated with ash woodlands;
- salvage an economic return from ash where timber production is an important objective;
- maintain as much genetic diversity in ash trees as possible with the aim of ensuring the presence of ash in the long term;
- minimise impacts on associated species and wider biodiversity; and
- manage the health and safety risks from dead and dying trees.

At Kingscote, we will trial, and monitor, a number of different management strategies for the dead and dying ash trees throughout the wood, with the forester and contractor deciding on the best course of action on a case-by-case basis. These strategies will include:

- leaving some patches of ash to fall and create deadwood and gaps in the canopy, which will be filled by natural regeneration of flora and trees as light reaches the woodland floor;
- removing individual ash trees through thinning operations to provide timber; and
- cutting groups of ash trees to create temporary open space, and to provide gaps into which we can plant new trees of various species in order to diversify the woodland.

Perhaps most importantly, we will bear in mind that ash dieback is still a relatively new disease in this country. We will continue to monitor the ash, looking for individuals that appear to be surviving and may therefore be resistant.

Like other woodland owners, Forestry England has to apply to the Forestry Commission for a licence to fell trees. However, we have a long-term thinning consent, which allows us to remove a proportion of trees in a stand on a ten year cycle for broadleaves. The rules are different for diseased trees, such as those suffering from ash dieback, so when making decisions about how and when to fell ash in Kingscote, the forester will refer to the latest guidance and agreements with the Forestry Commission (currently set out in the West England Forest District Guidance to Managing Ash Dieback (2020)), also seeking advice from Natural England for work in the SSSI where needed.

Management of tufa streams at Kingscote

A series of springs arising from an area of open farmland around Binley Farm to the west of Kingscote Wood form a stream that descends through the wood, and is joined by side springs. Tufa has developed in several places along these streams and springs. Tufa, which looks like a white-grey rock, forms when groundwater emerges from rocks rich in calcium carbonate, and interacts with the air leading to a loss of carbon dioxide and an increase in pH. Tufa streams and their surroundings often support important plant and invertebrate communities.

The main habitat features of the tufa springs and issues are:

- high alkalinity;
- the presence of large and coarse woody material;
- perennial spring water flow;
- barraging - banks of tufa across the channel; and
- the presence of bryophyte species assemblages.

The habitat forms when the stream is allowed to spread over land, with the formation of random flow pathways influenced by fine scale topography. Often the flows are diverted by logs and tree trunks falling into the stream pathway and changing the topography. Barraging occurs at these points too, as water is slowed down allowing mosses to colonise. Over time, tufa forms a dome or convex landscape, which creates further random flows and so on.

Management considerations include:

- the springs and issues are the key habitat component, with the main stream being less important because it is too fast flowing for the bryophyte assemblages to develop;
- the springs should be allowed to spread across the land, with no attempt to keep in any single or defined channel;
- trees should be allowed to fall within the habitat (which often happens due to the ground being saturated by the spreading stream) to create the random changes in flows;
- tufa may be vulnerable to physical damage, such as that which could be caused by forest operations; and
- two tracks cross significant tufa habitats - culverts have been installed.

Our principal management actions in the tufa habitats will be to:

- allow streams and springs to make their own course, and to overflow their channels;
- avoid felling trees immediately adjacent to any of the streams or springs;
- leave fallen trees and woody debris in situ;
- avoid operations and use of machinery;
- keep culverts clear with annual checks; and
- take advice from the Environment Agency / Natural England / our ecologist if we are considering any work which may change water flow e.g. if water flowing across tracks becomes a problem.

Section 5 - Consultation record

The external consultation for the Kingscote forest plan was open for five weeks in October / November 2021. Posters were put up at the main entrances to the wood, directing people to an online survey. The Forestry England planner and forester held an informal drop-in public consultation session at Kingscote in early November, which was a great opportunity for us to meet some of the woodland users and answer questions about the plan.

Respondents scored functions of the forest plan (including biodiversity, communities, forest products, and recreation) in terms of importance to them / their organisation. All respondents scored most of the functions as 'important' or 'very important', and most said that the forest plan addresses their needs and interests 'very well' or 'well', indicating that this is a woodland that is able to deliver a range of benefits for people and wildlife.

Positive comments from the feedback included:

"It is a clear and well-presented plan and reflects the SSSI interest features and likely constraints very well."

"I was very pleased to see such a detailed and comprehensive description of the wood and of the plans for the future."

"I enjoyed reading the plan and how it is embracing the current challenges facing forestry."

Some respondents raised concerns, including use of the wood by mountain bikers, and the condition of tracks and bridleways, and there were a couple of requests to allow horse riding in other parts of the wood, and not just on the bridleway.

Forestry England's response:

- We have only owned Kingscote for a couple of years. As we get to know it better, and understand more about how it is used, we will be able to identify tracks that need attention, such as vegetation control, and make decisions about how best to manage horse riding and mountain biking.

Some people requested that more detail is included in the plan - about the history of the wood, and how Kingscote will help to mitigate climate change.

Forestry England's response:

- There is a limit to the amount of detail that we can include in the final version of the forest plan, but be assured that we hold a great deal of background information, such as maps and documentation from the previous owners, at our office.

There was a request that we try to ensure that Kingscote is joined up to other local woodlands in order to improve habitat connectivity.

Forestry England's response:

- While we wholly recognise the importance of connectivity in the landscape, we are limited in what we can do to influence planting of trees or hedges on private land, but are happy to consider collaborating with neighbouring landowners if we are approached with proposals.

Forestry England - westengland@forestryengland.uk
November 2021