

Chart shows the current structure of the woodland separated into generalised habitat types.

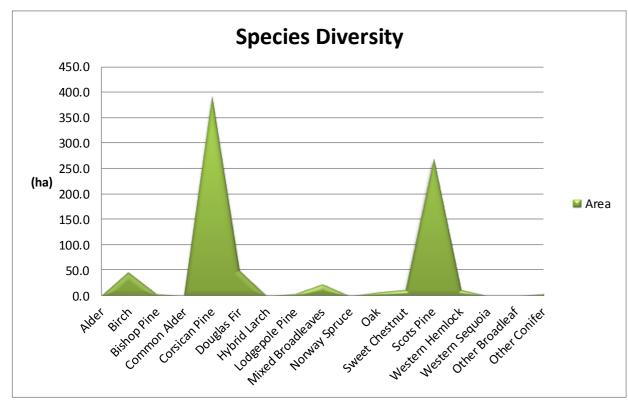


Chart shows the species diversity across the woodland blocks and how large an area they represent.

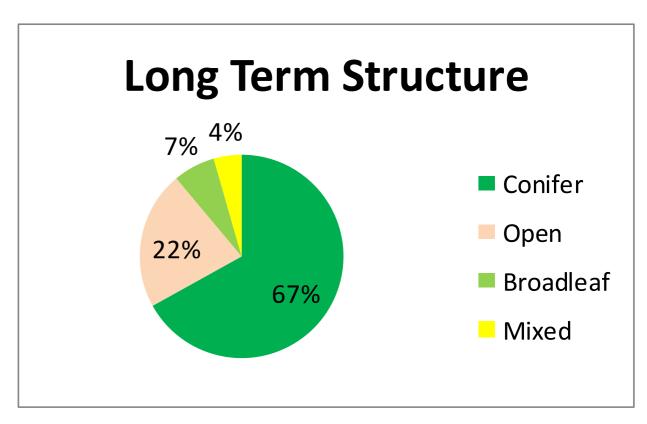


Chart shows the long term vision of the woodland separated into generalised habitat types.

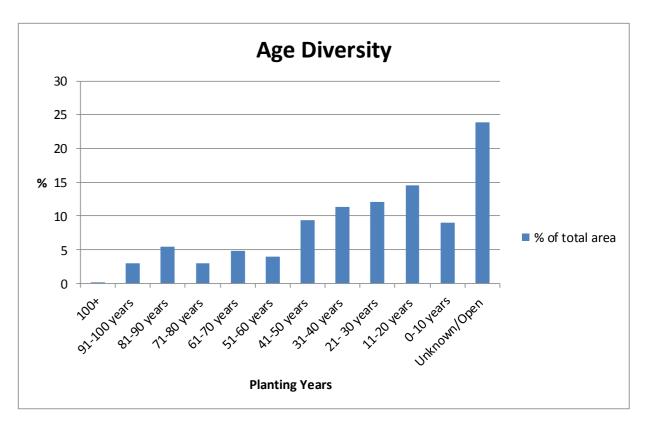


Chart shows the woodland broken down into broad age classes and what percentage of the area they represent.



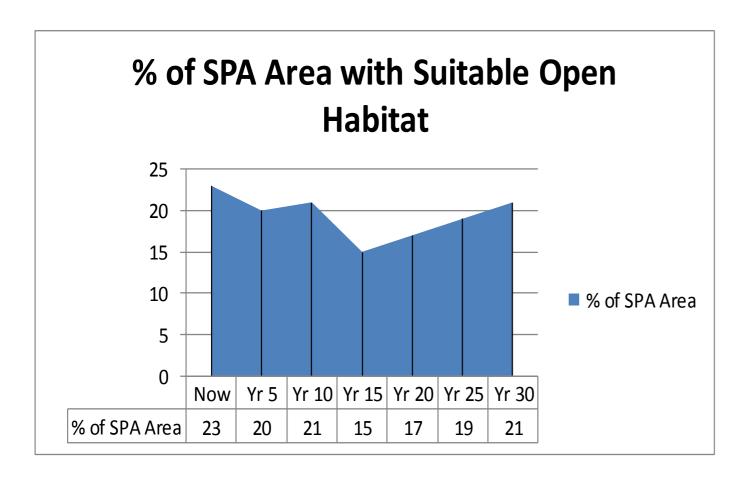


Chart shows an indicative description of how habitat will be created over time during the plan period following management interventions.

Suitable ground nesting bird habitat can be shown in the areas of permanent open space and woodland up to 5 years of age.

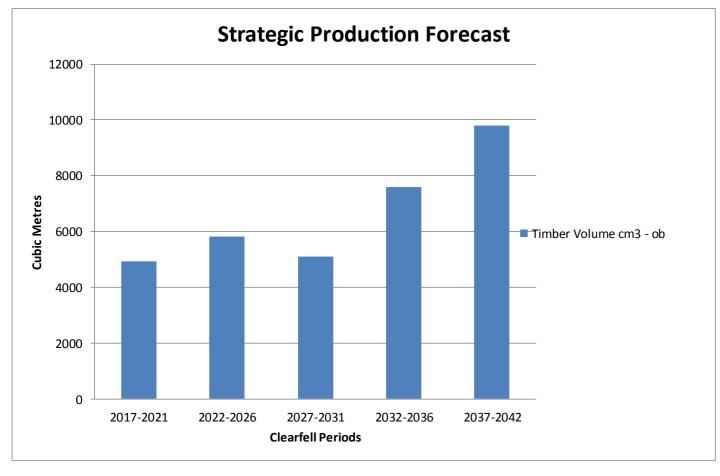


Chart shows an indicative description of the quantity of timber that will be harvested over the plan periods.



A wildfire risk assessment is an evaluation of the likelihood of a wildfire occurring and the severity of damage it might cause if it does occur.

Forest/woodland name;					
The Thames Basin Heaths					
What are the Fire Hazards?	Who/what might be harmed and how?	What are you already doing to manage the risk?	Initial Risk Rating	What else do you need to do?	Revised risk rating follow- ing implemen- tation of plan at year 5
Large blocks open space.	General Public and emergency services.	Phased programmes of scrub maintenance and firebreak maintenance.	Medium	Consider a grazing regime in the future.	
Large blocks of coniferous wood- land.	General Public and emergency services.	Long term plan to diversify the make up of the blocks, creating mixed species woodlands and restoring appropriate areas back to native woodland.	Medium	Evaluate high risk compartments and consider ways of speeding up the change of species makeup. Evaluate fuel loading during regular intervals.	
				Consider the introduction of fire belts and breaks in large compartments in high risk areas.	
Fires spreading from the road network adjacent to the blocks.	General Public and emergency services.	The majority of the road network is either bordered by open space or low risk broad-leafed woodland.	low	Increase vegetation management to reduce fire risk. A verge clear of vegetation should be 3.5m either side of access routes. In high risk areas consider the introduction of fire breaks 3x the vegetation height.	
Fires spreading from residential properties adjacent to the blocks	General Public and emergency services.	The majority residential properties are bordered by open space or low risk broad-leafed woodland.	low	Actively engage with owners about the risks of fire to both the PFE and their property to create an awareness of fire safety. In high risk areas consider the introduction of fire breaks 3x the vegetation height.	
Fires spreading from powerlines and underground utilities (gas pipes).	General Public and emergency services.	Any powerlines that go through woodland blocks already have a mandatory exclusion zone, free of high risk vegetation	low	Conduct ad-hock checks on the state of wayleave vegetation, contacting the relevant utility companies when appropriate.	
Fires spread from and into neighbouring woodland.	General Public and emergency services.	Fire retardant broadleaves and open space are the main components	low	Evaluate on an appropriate basis to main low risk rating.	



Objective	Proposed Actions to Meet Objective	Ref	Output year 10	Monitoring	Indicators of
Maintain the conservation value of wooded and open habitats seeking to improve ecological connectivity across the Forest Blocks.	Manage the woodland using appropriate silvicultural systems. During management interventions consult wildlife staff to identify opportunities for habitat maintenance and improvement. Implement management of non wooded areas including scrub clearance and tree removal where appropriate.	1	Opportunities are identified at Operational Site assessment (OSA) stage, acted upon and recorded within this plan. Non wooded areas have been maintained and enhanced.	OSA checks at implementation stage and Forest plan review at year 5.	A record of identification of opportunities, assessment of feasibility and fulfilment if appropriate.
Maintain the conservation value of wooded and open habitats seeking to improve ecological connectivity across the Forest Blocks.	Implementation of the accompanying SSSI/SAC plan as agreed with Natural England. During management interventions, opportunities for corridor widening and wider habitat enhancement will be taken in line with the SSSI/SAC management plan to increase the structural diversity of woodland edges and provide connecting habitats for key species to disperse. Phase the introduction of a low impact grazing scheme where/when appropriate.	2	Opportunities are identified at Operational Site assessment (OSA) stage, acted upon and recorded within this plan. Achieve and maintain favourable condition in all SSSI/SAC units.	OSA checks at implementation stage. Natural England rolling condition assessments	A record of identification of opportunities, assessment of feasibility and fulfilment if appropriate. Natural England's favourable condition table scoring and comments



Provide, maintain and enhance where possible the recreational experience of the woodland.	Look at increasing the accessibility of footpath and trails in the woodlands with a process of vegetation management around key areas. Safety checks of car parks and trails continued as per OGB 1 and 42.	3	Opportunities are identified at Operational Site assessment (OSA) stage, acted upon and recorded within this plan.	OSA checks at implementation stage. A record of identification of opportunities, assessment of feasibility and fulfilment if appropriate.	A record of identification of opportunities, assessment of feasibility and fulfilment if appropriate.
Enhance the species and age diversity of the timber resource. Control invasive plant species and reduce their impact across the forest blocks.	Managing non ancient woodland areas as mixed woodland allows the woodland to support a greater species diversity. This will benefit disease and climate resistance as well as adding to the aesthetic variation. The development of natural regeneration at various stages, will break up the currently rigid age structure Conduct regular monitoring of invasive plant species, reacting appropriately when threats are identified.	4a 4b 4c 5	Maintained number of tree species. Increased age diversity. Evidence of natural regeneration occurring. Opportunities are identified at Operational Site assessment (OSA) stage, acted upon and recorded within this plan.	Query sub compartment data base at year 5 and 10. Query sub compartment data base at year 5 and 10. Query sales and recording package at year 5 and year 10. OSA checks at implementation stage.	At least the same number of different tree species present at year 10 Improved age diversity at year 10 Increased successful establishment of natural regeneration. A record of identification of opportunities, assessment of feasibility and fulfilment if appropriate.
Provide a regular supply of quality timber to support local employment and local timber processing industries.	Regular management will provide a sustainable supply of wood products to the industry.	6	Wood products supplied sustainably to industry in line with the production forecast.	Query sales recording package at year 5 and year 10.	Wood products supplied to the timber industry in line with production forecast whilst fulfilling other objectives.

Ref	Comments year 5	Success?	Comments year 10	Success?
1				
2				
3				
4a				
4b				
4c				

Ref	Comments year 5	Success?	Comments year 10	Success?
5				
6				



Forest Plan Area	Forest Plan Percentage	Forest District Area	Forest District Percentage of Habitat/management type
1105.9	2.4% of district	45941	N/A
890	80.5%	30726	66.8%
0	0	520	1.1%
0	0	3141	6.9%
270	24	22050	47.9%
971.4*	87.8%*	29532*	64%*
	1105.9 890 0 270	2.4% of district 890 80.5% 0 0 2270 24	1105.9 2.4% of district 45941 890 80.5% 30726 0 0 520 0 0 3141 270 24 22050

^{*} Figure represents SSSI area only to avoid misrepresentation occurring from double counting.





Biodiversity

Life in all its diversity spanning genetic, species, populations, habitats and ecosystems.

Biodiversity Opportunity Area (BOA)

Mapped ecological restoration zones which cover large areas enabling a landscape-scale approach to nature conservation. Some ten BOAs have been identified on the Isle of Wight. It is intended that this network will help to expand, buffer and connect key sites for wildlife.

Compartments/Sub Compartments

Sections of woodland used to delineate and plan management.

Priority Ecological Corridors

A network of internal road and ride margins that will be managed in a sympathetic way to increase the structural diversity of the woodland and provide connecting habitats for wildlife.

Clear-fell

Cutting down an area of woodland typically greater than 0.25 hectares.

Establishment Phase

Areas of woodland that following a harvesting operation are being left to naturally regenerate from seeds found within the soil on site or have been planted.

Local Wildlife Sites or Sites Important for Nature Conservation (SINCs)

SINCs are non-statutory sites which are valuable for wildlife. They have substantive nature conservation value and their continued presence makes a significant contribution to maintenance of biodiversity. They may also have an important role in contributing to public enjoyment and understanding of nature. DEFRA guidance is that they should encompass all areas of substantive value, including both the most important and the most distinctive species, habitats, geological and geomorphological features within a national, regional and local context.

Shelter Wood System

Woodland management system whereby the forest canopy is maintained at one or more levels without clear felling, generally being no single interruption of tree cover of more than 0.25 hectares with a maximum of 2 interruptions of this size per hectare. Residual seed trees are left for an extended period of time after the new forest has been established.

Opportunities to enhance the existing areas of natural regeneration will be taken along with increasing woodland edge habitat by scalloping ride and road edges for the benefit of biodiversity.

Mixed Woodland

Woodland consisting of a fairly even mixture of broadleaf and conifer species.

Natural regeneration

The process of allowing a cleared area of woodland to regenerate naturally by the germination and development of seeds found within the soil on site. These may be still require some protection from overbearing plant species and mammal browsing . Some enrichment planting may also be necessary or desirable in areas were natural regeneration is showing limited success or in order to diversify the species range of the woodland.

Native (and honorary-native)

The trees making up the woodland are part of England's natural (or naturalised) flora. Determined by whether the trees colonised Britain without the assistance of humans since the last ice age (or in the case of 'honorary' native were brought here by people but have naturalised in historic times); and whether they would naturally be found in the part if England.

Native woodland

Woodland predominately made up of tree species that would naturally be found on that site.

Open Habitat

An area of ground that will have tree cover <5% and support a range of site suitable species.

Recreation Area

An area of woodland which is managed with recreation as the core focus. The woodland will still be managed but operations should be to enhance the recreational aspects of the area.

Research Plantation

Woodland that is being used to run an experiment managed principally by the research arm of the Forestry Commission.

Site of Special Scientific Interest (SSSI)

A site that has been designated as being of national importance for its wildlife and/or geological interest.

Special Area of Conservation (SAC)

A site designated under the Habitats Directive. These sites, together with Special Protection Areas (or SPAs), are called Natura sites and they are internationally important for threatened habitats and species.

Yield Class

The maximum average rate of volume increment which a particular stand can achieve per hectare.





This Forest Plan has been influenced by various key policy statements and guidance documents as listed below.

Government Forestry and Woodlands Policy Statement—January 2013

This document sets the direction of travel for forestry policy within England and is the reference point around which main aims and objectives of forestry and woodland management are designed.

The statement sets out the following key objectives, in priority order:

Protecting the nations trees, woodlands and forests from increasing threats such as pests, diseases and climate change.

Improving their resilience to these threats and their contribution to economic growth, peoples lives and nature.

Expanding them to increase further their economic, social and environmental value.

Strategic plan for the public forest estate in England

This plan sets out the direction and goals for the public forest estate in England and indicates the actions we will be taking to achieve these between now and 2020. Our ambitions are long term and we will use a normal cycle of review over 5 years to embed these in local forest plans and ways of operating.

Our mission for the estate.

To work with others to keep the Pubic Forest Estate as a special place for wildlife, people to enjoy and businesses to thrive—and achieve this by adopting a strategy that integrates all the three drivers of sustainable land management; economy, people and nature.

Our Vision and Overall Goal

"To secure and grow the economic, social and natural capital value of the public forest estate for the people of England"

South District Forest Strategic Plan

The strategic management plan is a Forest Enterprise District Level document that informs local Forestry Commission Staff about the management direction of the Public Forest Estate and the associated policies. The Forest Plans are a key mechanism for delivering policies on the ground.

Open Habitat Policy, 2010

This is Government policy on how to decide when to convert woodland to open habitat in England.

United Kingdom Forestry Standard

The UK Forestry Standard (UKFS) is the reference standard for sustainable forest management in the UK. The UKFS, supported by its series of guidelines, outlines the context for forestry in the UK, sets out the approach of the UK government to sustainable forest management, defines standards and requirements, and provides a basis for regulation and monitoring.

UK woodland Assurance Standard (UKWAS)

An independent certification standard for verifying sustainable management in the United Kingdom.

Keepers of Time

This policy statement celebrates the importance of our native and ancient woodland and sets out a basis on which to achieve the following vision.

"Ancient woodlands, veteran trees and other native woodlands are adequately protected, sustainably managed in a wider landscape context, and are providing a wide range of social, environmental and economic benefits"

Managing ancient and native woodland in England: Practice Guide

This practice guide has been produced to help practitioners translate what measures and practical action can be taken to protect and enhance our ancient and native woodlands and guides implementation of the approaches to management and restoration trialled in woods around the country.

Managing deadwood in forests and woodland 2012

A practice guide encouraging owners and managers to develop a strategic approach to deadwood with an emphasis on working with natural processes.

Choosing stand management methods for restoring planted ancient woodland sites, 2013.

A practice guide showing different silvicultural methods for restoring planted ancient woodland sites.



Special Protection Area Citation

EC Directive 79/409 on the Conservation of Wild Birds Special Protection Area (SPA)

Name: Thames Basin Heaths

Unitary Authority/County: Bracknell Forest; Hampshire; Surrey; Windsor and Maidenhead.

Site description: The Thames Basin Heaths SPA is a composite site that is located across the counties of Surrey, Hampshire and Berkshire in southern England. It encompasses all or parts of Ash to Brookwood Heaths Site of Special Scientific Interest (SSSI), Bourley and Long Valley SSSI, Bramshill SSSI, Broadmoor to Bagshot Woods and Heaths SSSI, Castle Bottom to Yateley and Hawley Commons SSSI, Chobham Common SSSI, Colony Bog and Bagshot Heaths SSSI, Eelmoor Marsh SSSI, Hazeley Heath SSSI, Horsell Common SSSI, Ockham

and Wisley Commons SSSI, Sandhurst to Owlsmoor Bogs and Heaths SSSI and Whitmoor

Common SSSI.

The open heathland habitats overlie sand and gravel sediments which give rise to sandy or peaty acidic soils, supporting dry heathy vegetation on well-drained slopes, wet heath on low-lying shallow slopes and bogs in valleys. The site consists of tracts of heathland, scrub and woodland, once almost continuous, but now fragmented into separate blocks by roads, urban development and farmland. Less open habitats of scrub, acidic woodland and conifer plantations dominate, within which are scattered areas of open heath and mire. The site supports important breeding populations of a number of birds of lowland heathland, especially nightjar *Caprimulgus europaeus* and woodlark *Lullula arborea*, both of which nest on the ground, often at the woodland/heathland edge, and Dartford warbler *Sylvia undata*, which often nests in gorse *Ulex* sp. Scattered trees and scrub are used for roosting.

Together with the nearby Ashdown Forest and Wealden Heaths SPAs, the Thames Basin Heaths form part of a complex of heathlands in southern England that support important breeding bird populations.

Size of SPA: The SPA covers an area of 8274.72 ha.

Qualifying species:

The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

Annex 1 species	Count and season	Period	% of GB population
Nightjar Caprimulgus europaeus	264 churring males – breeding	1998/99	7.8%
Woodlark Lullula arborea	149 pairs – breeding	1997	9.9%
Dartford warbler Sylvia undata	445 pairs – breeding	1999	27.8%

Non-qualifying species of interest: Hen harrier Circus cyaneus, merlin Falco columbarius, short-eared owl Asio flammeus and kingfisher Alcedo atthis (all Annex I species) occur in non- breeding numbers of less than European importance (less than 1% of the GB population).

Status of SPA:

Thames Basin Heaths was classified as a Special Protection Area on 9 March 2005.

Thames Basin Heaths SPA UK9012141 Compilation date: February 2005 Version: 1.1 Classification citation Page 1 of 1



SSSI Citation - Castle Bottom to Yateley & Hawley Commons

County: Hampshire Site name: Castle Bottom to Yateley and Hawley Commons

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the

Wildlife and Countryside Act 1981 (as amended after 1981)

Local Planning Authorities: Hampshire County Council, Hart District Council, Rushmoor Borough Council

National grid reference: SU834588

Ordnance Survey sheet: 1:50,000: 175,186 1:10,000: SU85 NW, SU85NE, SU86 SW, SU76 SE

Date notified (under 1949 Act): 1979 (Yateley Common)

Date notified (under 1981 Act): 1985, 1986, 1993

Date of last revision: 20 October 2000

Area: 921.41 ha

Reasons for notification

This site is notified for its heathland and young conifer plantation which supports an internationally important population of Dartford warbler and populations of two other internationally important species, woodlark and nightjar. The scrub/heathland interface supports a particularly rich invertebrate fauna including a number of nationally scarce species. It also supports an outstanding Dragonfly assemblage.

General description

Castle Bottom to Yateley and Hawley Commons is one of the largest remnants of lowland heathland in the Thames Basin. The majority of the site is on gently undulating plateau gravels; the valley bog at Castle Bottom is underlain by Bagshot Beds and Bracklesham Sands.

The dry heathland areas are dominated by heather *Calluna vulgaris*, bell heather *Erica cinerea* and dwarf gorse (flex minor, grading locally to humid heath dominated by heather, bell heather, cross-leaved heath *Erica tetralix* and purple moor-grass *Mohnia caerulea*, or acid grassland with dense bracken *Pteridium aquilinum*. Gorse *Ulex europaeus*, silver birch *Betula pendula* and pine *Pinus sylvestris* scrub form part of the mosaic. Small areas of grass heath are dominated by bristle-leaved bent grass *Agrostis curtisii*, here near the eastern

limit of its distribution. The nationally scarce upright chickweed *Moenchia erecta* is found together with the largest Hampshire colony of the locally uncommon moonwort fern *Botrychium lunaria*. The locally uncommon meadow thistle *Cirsium dissectum* is found towards the south westerly end of the site.

Valley mire vegetation at the site is dominated by tussocky purple moor-grass and bog myrtle Myrica gale. The rich bog flora associated with the more open areas includes white

beak-sedge Rhynchospora alba, two species of sundew Drosera rotundifolia and D. intermedia, dodder Cuscuta epithymum, bog asphodel Narthecium ossifragum and bog pimpernel Anagallis tenella.

The site supports at least 19 species of dragonfly and*damselfly out of a total of 37 resident species in Britain. These include two nationally scarce species, the small red damselfly *Ceriagrion tenellum* and the downy emerald *Cordulia aenea*, both associated with bog. Heathland invertebrates include the nationally rare bee *Hyaeus gibbus* and a number of nationally scarce species including two native cockroaches, the dusky cockroach *Ectobius lapponicus* and lesser cockroach *E. panzeri*, and the silver-studded blue butterfly *Plebejus argus*. The nationally rare conopid fly *Myopa fasciata* is recorded from the scrub/heath interface.

The mosaic of open heath, young plantings and broad rides within coniferous plantation, and scrub provides habitat for a number of heathland birds. These include stonechat Saxicola torquata together with three highly vulnerable species of bird, woodlark Lullula arborea, nightjar Caprimulgus europaeus and Dartford warbler Sylvia undata. The site is also a regular feeding habitat for the hobby Falco subbuteo.

Other information

- 1. Part of this site is a Country Park and part is registered and confirmed common land.
- 2. This site includes land which has been proposed for designation as a Special Protection Area under Directive 79/409/EEC on the Conservation of Wild Birds. Nightjar, woodlark and Dartford warbler are listed on Annex 1 of the Directive.
- 3. Woodlark and Dartford warbler are specially protected by being listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
- 4. Woodlark, nightjar and hobby are priority species in the UK Biodiversity Action Plan.
- 5. Lowland heath is a priority habitat in the UK Biodiversity Action Plan.



SSSI Citation - Bramshill

County: Hampshire Site name: Bramshill

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the

Wildlife and Countryside Act 1981 (as amended)

Local Planning Authority: Hampshire County Council, Hart District Council

National grid reference: SU774596

Ordnance survey sheet: 1:50,000: 186 1:10,000: SU76 SE/SW, SU75 NE

Date notified (under 1981 Act): 1988, 1990 Date of last revision: 20.10.2000

Area: 671.99 ha Date of Confirmation: 17.7.2001

Reasons for Notification

This site is notified for a series of shallow acid ponds and associated mire, which support a rich assemblage of dragonfly and damselfly, and rotationally felled conifer plantation, which provides habitat for internationally important populations of nightjar, woodlark and Dartford warbler.

General Description

Bramshill comprises extensive areas of conifer plantation together with a series of shallow acidic ponds within relic wet heathland and a small unimproved grassland area adjacent which provides habitat for the nationally rare small fleabane Pulicaria vulgaris.

Management of the pine plantations results in a sequence of clearings and young coniferous trees which are utilised by breeding nightjar Caprimulgus europaeus, woodlark Lullula arborea and Dartford warbler Sylvia udnata. The site also contains small breeding populations of hobby *Falco subbuteo* and little ringed plover *Charadrius dubius*

The pond areas differ in character, the northern and middle areas occupying former gravel workings, whilst the southern series occupies a damp valley and was formed by damming a small acidic stream. The areas of open water are dominated by bog pondweed Potamogeton polygonifolius and very large populations of the nationally scarce pillworth *Pilularia globulifera*. The shallow, often exposed margins have a rich flora dominated by soft rush *Juncus effuses*, compact rush J. conglomerates, lesser spearwort *Ranunculus flammula* and reedmace *Typha latifolia*. Nationally scarce plants occurring here include the needle spike rush *Elecharis acicularis*, six stamened waterwort *Elatine hexandra* and small water-pepper *Persicaria minor*.

Within the plantations there are a few small areas of wet heath dominated by purple moor- grass *Molinia caerulea*, wet heathland with cross leaved heath *Erica tetralix* and fragments of dry heathland with heather *Calluna vulgaris*. Locally uncommon plants present include petty whin *Genista anglica* and small cudweed *Filago minima*, together with stag's horn clubmoss *Lycopodium clavatum* at its only Hampshire location. Heath communities are present alongside forest tracks and briefly recolonise after forestry clearance operations, before the tree cover closes over again following planting. Yellow *bartisia Parentucellia viscose* is found along some woodland rides.

The acidic ponds are fed by the surrounding heathland and are generally clear and free of pollution. At least 24 species of dragonfly and damselfly have been recorded breeding out of a total of 37 resident in Britain. The occurrence of the nationally scarce small red damselfly *Ceriagrion tenellum*, downy emerald *Cordulia aenea* and brilliant emerald *Somatochlora metallica* are of particular note. The open water and heathland areas are also important for other invertebrates, including the nationally scarce horsefly *Tabanus cordiger*, woodland grasshopper *Omocestrus rufipes* and a colony of the shortwinged conehead *Conocephalus dorsalis*.

Two umimproved grassland fields close to Springwater Farm lie adjacent to the northern plantation at Bramshill. Extensive grazing has created habitat for a population of the nationally rare small fleabane Pulicaria vulgaris, which is also vulnerable in a European context. This is the only site in Hampshire which supports this plant, outside the New Forest.

Other Information

- 1. This site incorporates two areas previously notified as Bramshill SSSI and Warren Heath Ponds SSSI with extensions to incorporate coniferous plantation which provide habitat for Annex I birds.
- 2. This site includes land which has been proposed for designation as a Special Protection Area under Directive 79/409/EEC on the Conservation of Wild Birds. Nightjar, woodlark and Dartford warbler are listed on Annex 1 of the Directive.
- 3. Woodlark and nightjar are priority species in the UK Biodiversity Action Plan.
- 4. Woodlark, Dartford warbler, hobby and little ringed plover are specially protected by being listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).





Stage 1

- Internal review of the previous forest plan
- Policy review and broad discussions
- Site visits and preparations of draft maps

Stage 2 [insert dates]

- Online survey
- Amendment's made following feedback

Stage 3

- Further consultation on the forest services register of grants and felling applications
- Amendment's made and felling approval sought

Consultees

Environment Agency | Butterfly Conservation | RSPB | Natural England | Wokingham Borough Council | Hart District Council | Hampshire County Council | Woodland Trust | Hartley Whitney Parish Council | Crowthorne Parish Council | Hampshire and Isle of Wight Wildlife Trust | Bucks, Berks & Oxfordshire Wildlife Trust | National Trust | Ancient Tree Forum | Botanical Society of the British Isles | Hampshire Bat Group | British Dragonfly Society | Wessex Lichen Group | British Mycological society | Buglife | Bumblebee Conservation Trust | Freshwater Habitats Trust | Plantlife | The Deer Initiative | BSW Timber Group | Amphibian and Reptile Conservation Trust | Forest Services | Aggregate Industries | Bat Conservation Trust | Berkshire & South Bucks Bat Group | Berkshire Ornithological Club | Hampshire Biodiversity Information Centre | Thames Valley Environmental Record Centre | Blackwater Valley Countryside Management Trust | British Dragonfly Society | Amphibian & Reptile Groups UK | Hampshire Flora Group | Hampshire Mammal Group | Loddon Catchment Partnership Project | Species Recovery Trust | East Brothers | Thompsons | Euroforest | Kronospan | Powell Forestry | Mendip Forestry |

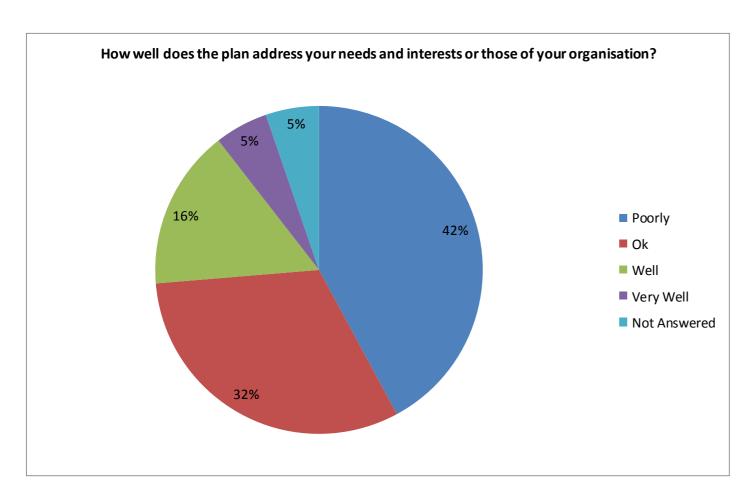


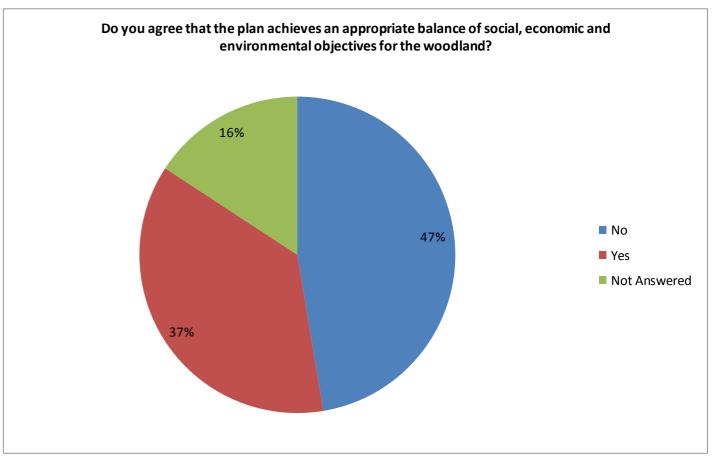
Online Survey Results

A public consultation was carried out online between 30/10/17 & 27/11/17

Respondents were asked to score how well the plan address their needs and interests, whether the proposals achieved an appropriate balance of objectives and were invited to provide further comments.

A breakdown of the responses to these 2 questions can be seen in the charts below.





Changes following consultation

No major changes have been deemed necessary. Minor changes have been made to open space areas and the location of priority ecological corridors as well as more detailed prescriptions for what 'open habitat' areas will consist of.

Of the 19 responses received the majority of the feedback concerned the provision of recreation and in particular mountain biking. We are currently discussing a recreation strategy for this area and these comments will form an important backdrop to those discussions. Any future provisions will be a carefully construed balance of maintaining our obligations to conserve and enhance statutory habitats, our commitments to a working forest and the timber industry, restrictions of public access due to leasehold agreements and our limited staff resource.



Stakeholder

Comments

My friends and I regularly mountain bike within Bramshill, Warren Heath and Heath Warren. These areas have significant potential to offer mountain bike trails to suit many skill levels. We typically ride trails that are an- nually churned up by motorbike Enduro events.

It would good for the consultation to consider:

- mountain bike trails that would be considered alongside logging and motorbike uses of the forest, promoting family exercise and sustainable use of the forest
- more parking areas especially as the gravel extraction areas become vacant
- local MoD land is being closed to mountain bikers and dog walkers due to increased training demand therefore there is a need

My friends and I are willing to set up a volunteer group to progress this, which would hopefully dovetail with other groups who are keen to see the forest used as a common recreational facility and provide channels to re- port and deter inappropriate use.

Member of Public

A number of these areas are deemed to be in poor condition (see Hartley Wintney Neighbourhood Plan Strategic Environmental Assessment)

I'm assuming the commercial development/felling funds the work that the Forestry Commission undertakes and that there is a contribution from the tree felling and gravel extraction activities.

Member of Public

Member of Public

I think there could be benefits from clearly signposting at key points of entry to the identified areas the leisure benefits (walks, bike & horse riding) so that the local community are encouraged for their Health & Wellbeing to take advantage of these impressive locations.

Open, responsible, access should be allowed and encouraged: walkers, horse riders, cycling. Not motorised. That means reasonable access - not just marked, sanitised trails.

There is an opportunity here, and whilst the primary objective is focused on maintaining the ecosystem within the forestry boundaries by redistributing the mix of planting, it should also be a time to consider that with this impending change what other parallel changes can be delivered in respect of meeting the needs of the other key interests of the forest (e.g. visitors / tourists / trails / other revenue opportunities beyond timber). As some- one who regularly visits the forest from 30 miles away (usually at least once weekly), it would be fantastic to see a parallel plan to develop the walking, hiking and biking trails to turn Swinley from what is an already great activities and nature attraction to a 'go to' honey pot centre. A project like this could be successfully managed with effective engagement and collaboration of the appropriate parties & groups that are currently active using the facilities, and would deliver so much more beyond the initial objective.

Red Ant Consulting Ltd

I have a personal interest in the use of Bramshill, etc. I have used it as a facility to ride mountain bikes for many years- The isolated location and general landscape, wildlife etc help substantially with my personal mental health and general fitness/ wellbeing. I would hope any plans should at the very least still allow this access/ tolerance of mountain biking if not actually increase it- The use of MOD lands for general recreation is currently being squeezed and reduced and i would hope that the FC's allowance of recreational use to continue- I would be happy to pay a small fee for any permit system to cover usage/ insurances etc that were felt necessary. Thank you.

Member of Public

With growing pressure on the "wild" open spaces in the region as the MOD tighten their grip n their training land and restrict access further and further, the pressure on FC land will increase, as more people will be pushed onto to FC lands. Having a plan to deal with this, and to incorporate the views of users from horse riders to mountain bikers, as well as more traditional users will be vital. As a cyclist I hope that access plans and future devel- opments will welcome and encourage riders on to the land, with the obvious exceptions of fair, sensible and considerate use. With use not simply restricted to broad forest paths, but to incorporate singletrack riding.

Member of Public Member of Public

I don't see how the plan meets any real goals. That's not explained in the "plan".

It would be great to offer more against the objective to provide maintain and enhance the recreational aspect of the woodland.

This can be easily achieved through better use of the resulting trails from motor cross (mx) events, and making them rideable for mountain bikers in between the mx events. This can be achieved through volunteers and requires little investment by the FC in either monetary or administrative terms.

I would welcome the opportunity to discuss further with the FC.

Member of Public

This could be a great resource for local residents to exercise and maintain their own well being.

Recreational opportunities should be prioritised in this plan - for example additional facilities for mountain biking. Commercial timber management should continue but should be a secondary concern given the very large population and lack of alternate recreational provision in the area. The mountain bike centre created in Swinley forest has been excellent and additional trails should be built (with the help of community organisations such as Trail Team Swinley, BOB or other local clubs) on these lands.

Member of Public

Trail Action Group

With the increasing tension between the MOD and Mountain Biking Community on MOD lands, it would be great if the FC enabled (or encouraged) the development of responsible cycle trail facilities in the lands it manages. Such facilities can be managed cooperatively with forestry operations as they are in Swinley Forest.

Member of Public

Some single track mountain biking, like Swinley Forest / the lookout in Bracknell would be a good improvement.

The highest priority Lepidoptera interest in this landscape, as defined by Butterfly Conservation's Regional Action Plan for South East England 2016-2025) are all associated with heathland, in particular a continuity of an in-terconnected mosaic of young and regenerating growth stages of heathers and young trees.

There heathland priority species are:

Silver-studded Blue (s41) - Create a mosaic of Bell Heather age-classes, ideally containing Cross-leaved Heath, managed on a long rotation by cutting/scraping. Should-striped

Clover (s41) - Conserve large tracts of damp heathland where young Cross-leaved heath is abundant.

Grayling (s41) - Maintain and improve a mosaic habitat containing heathers, fine-leaved grasses and patches of bare ground.

Silvery Arches - Maintain diverse heaths rich in food plants which may include Birch (Silver and Downy), Sallow, Bog-myrtle, Hawthorn and Honeysuckle.

Butterfly Conservation

The retention of rotational clear-felling and restocking of conifers as the dominant silvicultural system operating within the FDP is appropriate and welcome (c.56% of the estate). This on-going management is a vital activity within the SPA for the benefit of populations of nightjar, Dartford warbler and woodlark. Harvested areas of at least 1.5-2.0 ha in size, in blocks rather than strips, are most likely to create the temporary, open habitat that these species find attractive.

In an 'ideal' scenario, perhaps 5% or more of the rotational conifer resource might be clear-felled in each 5-yr period to ensure provision of a continuous supply of temporary open habitat to support SPA birds. However it is recognised that this may not always be realistically achievable, given the long timescales associated with forestry harvesting cycles, and other commercial constraints.

Adequate suitable habitat is achievable in the TBH blocks however through a combination of clear-fell & re-stocking, restoration of areas post-mineral extraction, and provision of high quality, permanent open habitat in mo-saic within the complex.

The period 2017-21 will see a significant area of suitable temporary habitat created through both clear-fell (c.25 ha) and restocking of restored mineral areas (c.64 ha).

The following period however, 2022-26, has a much smaller area allocated for rotational clear-fell/restocking (c.14 ha). It will be important in this period therefore that particular attention and effort is given to the manage- ment of permanent open habitat for the benefit of Annex1 birds.

There are significant areas allocated for permanent, open habitat within the FDP, currently c.15% of the estate, rising to nearly 18% following completion of S.106 agreement work. Comprising a mix of wet and dry heath, scrub, ponds and mire habitats, these areas will require on-going resources to manage and maintain conditions suitable for SPA birds, as well as the rare plants, and assemblages of dragonflies and damselflies present at Bramshill SSSI.

The proposed introduction of grazing animals to parts of the site may be beneficial, particularly with regard to the management of wetter areas. The difficulties around enabling this type of management are acknowledged but it's a proposal worth exploring collectively.

Hobbies are also known to breed within mature Scots Pine in both Bramshill Plantation and Warren Heath, in areas planned for conversion to CCF and clear-fell, respectively. We would encourage the retention of trees with high potential to provide hobby nesting sites, i.e. those with old crow's nests in the canopy, but it is acknowledged that this will not always be practical.

The forthcoming Bramshill SSSI Management Plan, with costed actions, is very welcome and will no doubt examine all these issues and features in more detail than is appropriate in this FDP.

While not nationally designated, it is worth mentioning Gorrick Plantation as a Local Wildlife Site. The site does support breeding woodlark and nightjar, and while the areas of pure conifer production will be reduced over time, ongoing clear-fell areas, including chestnut coppice, should continue to serve as a periodic 'outlier' for SPA and other birds. The site also supports hobby and it is hoped that key nest sites can be identified for reten- tion. Gorrick is a hotspot for adders, using the scrubby heath habitat. The planned enlargement of this area over time is welcome, ideally clear of mature, shading trees. The creation by FC of ponds at other sites in this area have proved successful for wildlife; there are areas of poor drainage at this site that may also lend themselves well to additional pond creation, for the benefit of scarce dragonfly species in particular.

Natural England welcomes the proposals as a significant contribution towards meeting nature conservation objectives for the Thames Basin Heaths SPA.

Location notes, approximate:
Hobbies breeding, Bramshill Plantation – SU748622 & SU755620
Hobbies breeding, Heath Warren – SU770607
Hobbies breeding, Gorrick – n.w. cmpts. – mixed woodland regen. Adders, Gorrick – SU168584

Ian McConnell Lead Adviser 27.11.2017



RSPB Comments

Thank you for consulting the RSPB on the Thames Basin Heaths Forest Plan (2018 - 2028) ('the plan') and we appreciated the meeting to discuss elements of the plan in further detail.

Objectives

We understand the remit of the Forestry Commission to provide a supply of timber and we broadly welcome the other plan objectives, particularly the aim to maintain the conservation value of the open habitats and seeking to improve the ecological connectivity. In respect of the Annex I birds (woodlark, nightjar, Dartford warbler) we appreciate the objective to 'safeguard' these birds; however, in the context of the Thames Basin Heaths Special Protection Area (SPA) we strongly urge that this should be to main tain and enhance the SPA features / Annex I birds.

Whilst we recognise the opportunities the area presents for recreation, it is important that this is carefully considered to ensure that sensitive habitats and species are not adversely affected and we strongly recommended that a holistic approach is adopted to considering access and recreation via an access management strategy for the sites.

Open Habitats

The plan refers to 'open space' and 'open habitat', this does not provide clarity on what habitat is being provided / managed for in these areas. These very broad terms include areas which will not or are unlikely to contribute to supporting the heathland bird species such as open water, mires and wet heath. In contrast the 2007 Forest Design Plan (FDP) specified "permanent open space maintained for heathland bird species" which provided greater clarity regarding which areas are anticipated to provide value for the heathland bird species and where the management will be focused. In addition defining areas which would provide permanent open habitat to support heathland species allowed assessment of the function these areas could provide in connecting and linking temporary habitat within the site, which is not possible now with the information provided in the plan.

However, based on the aspirations detailed in the plan we are very disappointed at the seeming reduction in habitat available for the heathland bird species, designated features of the SPA and component Sites of Special Scientific Interests (SSSIs). The 2007 FDP stated that "The area of open space available for use by the ground nesting birds totals 20% (not including rides) of the total area cove red by the forest design plan at any one time" (pg 25) in contrast the plan now states "the plan revision aims to provide a rolling programme of open habitat in the future with a minimum of 10% existing at any one time". This is inappropriate, particularly in light of the uncertainty surrounding the future suitability of these areas, as discussed below, and we would urge that a greater area is dedicated, rather than consideration of any kind of reduction.

Following adoption of the 2007 FDP, policy relevant to the further creation and retention of open habitat1,2 has been produced, which gives direction in terms of where priority should be given to the restoration of open habitats including lowland heathland. This policy seems particularly important when considering this plan as the sites clearly meet the criteria for when the Forestry Commission may support the conversion of woodland to open habitat, yet this plan seems to reduce its commitment to open habitat.

We welcome that the plan creates / manages areas of open habitat which are likely to be beneficial for invertebrates and plants associated with wet heath / mire and recognised in the SSSI designations. However, we are disappointed that the focus of the permanent open habitat is on wet areas rather than also including dry areas more suited to the Annex I bird species.

We welcome the aspiration to manage the open habitat areas through grazing in the future. However, we note that some of the areas of open habitat are probably too small to be viable grazing units in their own right. The design of the grazing scheme will be crucial in deter- mining the outcomes. The intent to find a partner organisation, perhaps with more experience in setting up grazing schemes, is therefore welcomed.

Tree Species

The Forest Plan identifies that "future forest management will aim to diversity the species mix, particularly as many of the stands have been affected by Dothistroma". The current tree species are predominantly Corsican Pine and Scots Pine, the clearfell / restock creates temporary open habitat for use by breeding woodlark and night jar, however, a potentially significant shift in crop choice to trees (e.g. Norway spruce or Douglas fir) as a result of Dothistroma is a cause for concern. These alternative species may be less suited to generating the temporary open heath habitat, as needle litter accumulation is higher than in current crop species and also this could reduce the longer term potential restoration to open heath habitat. In addition the shading effect of these alternative species can be greater, reducing the potential for an understorey containing heath plant species.



Suitability of Rotation Plantation Forestry to Support Woodlark and Nightjar

Other factors which affect the availability of open heath habitat and the long term potential for restoring these habitats in the future include the fertilising effects of atmospheric deposition, climate change and increased atmospheric CO2 on vegetation growth rates. Lowland heath habitat exists on impoverished, acidic soils, as nutrients increase, caused by atmospheric deposition and by forest management, the field layer character and composition shifts from bare ground and sparse heathland vegetation to dens er grasses, gorse and bracken and consequently generally becomes less suitable for the Annex I bird species.

Organic matter and nitrogen levels both increase under Scot pine, and more so under Norway spruce, after just one rotation. Rotational forestry is relatively recent in the UK whereas elsewhere on podsolic (heathland type) soil the practise has worked through three rotations (temperate S. Australia) and here significant increase in forest productivity occur in the 3rd rotation. This again raises concerns regarding the availability of suitable open habitat as part of rotational forestry going forward.

Comparative analysis of occupancy of forest clearfells by woodlarks has shown a contraction in duration of occupancy between 1997 and 2006, together with a forward shift of peak occupancy from years 2-3 to 0-1 post felling3 which suggests that the suitability is declining more guickly.

Going forward the anticipation is that the availability of temporary open habitat provided by rotational forestry on these sites, which the Annex I heathland birds utilise, is likely to be reduced. This needs to be further considered within the plan preferably through the provision of a greater area of permanent open habitat suitable of supporting the Annex I birds.

Continuous Cover Forestry / Mixed Woodland

We note that the revised plan includes an increased area of broadleaved/mixed woodland, to be managed under a CCF regime. The plan itself does not specify the nature of the CCF system proposed, but we understand from discussions that it is intended to create gaps of between 0.25 and 2.00 ha to be re- stocked via natural regeneration. In other circumstances the RSPB would be highly supportive of such measures, but in the context of a site designated for Annex 1 open habitat species, we have concerns. The plan rightly recognises the importance of the clear fell/restock regime for those species, but then proposes to reduce the area of forest to be managed in this way.

We note that while gaps of 2 ha might provide "temporary open space" even for some Annex 1 birds, gaps of just 0.25 ha are unlikely to be of great value. Without further clarity about the likely size of the gaps to be created i.e. at which end of the stated range they will be, and how these will be maintained, it is difficult to feel reassured that the CCF areas will not reduce the available areas of habitat and their connectivity.

We also have concerns where areas to be managed as CCF might act as a barrier to the dispersal of open habitat species, e.g. invertebrates and reptiles. Examples include areas alongside the minor road between Busta triangle and Eversley Quarry, and on Bramshill Plantation south of Well House Lane. In addition the increase in broadleaved trees will also lead to a faster rate of increase in soil nutrients, which could, in effect "sterilise" these areas for any future open habitat restoration.

Yateley Heath Wood

We note that the plan refers to a significant area of habitat subject to a s.106 agreement within this plantation. We understand that this area is to be restored to a mix of mire and wet heath with a fringe of dry heathland. This is to be we loomed, although recommend that greater clarity is provided of these proposals in the plan. However, we note that a narrow band of conifer woodland is to be retained between the two blocks of open habitat. We would suggest that this is an unnecessary barrier to the movement of open habitat species and its removal would increase connectivity between these areas.

Busta Triangle

We note that the current open pools and developing marginal heathland habitat at Busta Triangle is proposed to be filled and returned to forest. We consider that this is a disappointing missed opportunity as the area has already started to develop into valuable habitat with notable species such as ringed plover and lapwing observed. We would urge that the Forestry Commission reconsiders the proposed "restoration" of this area. We recognise the constraints that exist in respect of the restoration plan for this site, however, we consider that this could be revised and at a minimum some further retention of these developing habitats is strongly encouraged.

Lack of Connectivity / barriers to movement

The issue of ecological connectivity has been touched on elsewhere, and it is highlighted as one of the objectives of the plan. We note that the plan shows where rides are intended to be fringed with open habitat. We welcome this, but would stress that to be most effective such fringes need to be sufficiently wide to be in full sun for most of the day, even when adjacent crops are fully mature. We also note that many rides are not shown as having such a fringe. Of particular concern is the northern block of Heath Warr en plantation, where none of the rides are shown as having a fringe of open habitat leaving small patches of open habitat effectively isolated.

Recreation / Access Management.

Nightjar, woodlark and Dartford warbler are affected by recreational disturbance. Public access /disturbance is recognised by Natural England in the Site Improvement Plan for the SPA as currently the main pressure and threat to the SPA. In addition the use of heaths for recreation brings other issues such as dog fouling resulting in nutrient enrichment and resulting in habitat change. It is acknowledged that outdoor recreation is important for public health and wellbeing and we consider that the forest estate provides an opportunity to provide recreational opportunities whilst protecting sensitive open habitat areas from adverse impacts. Managing access on site to focus recreation on the robust habitats and away from the sensitive open areas should be considered across the sites and we strongly urge that an access management strategy is developed, which would complement the work by the Thames Basin Heaths SAMM wardens.



Management of Open Habitat

The overall impression is that the open habitat provision has been fitted in around the commercial forestry. While we understand the commercial constraints that Forest Enterprise must operate under, this approach has led to a perverse outcome, in that the areas of open habitat are often in the form of long narrow strips, or in convoluted shapes. This leads to greater "edge" effects, including scrub encroachment, and makes the open habitats more expensive to manage on a per ha. basis. Consideration might be given to having larger areas, linked with fewer, but more robust linkages.

It was noted from visiting areas in the plan that much of what is marked currently as open habitat is heavily "scrubbed up", and that relatively little is considered to be functioning as open habitat. This was particularly the case on Bramshill plantation, but the issue was present on parts of the larger "open" spaces on Warren Heath/Heath Warren plantations as well. The RSPB recognises that scrub is a component of open habitats, but that should not generally be more than 10 -15%. The issue was exacerbated by the deliberate leaving of screens of scrub to prevent public access. While the value of this is understandable, this policy serves to further reduce the area that could support open habitat species, and acts as another barrier to their dispersal. However, there are some good examples of open habitat notably 'the flashings' on Warren Heath / Heath Warren. We seek reassurance that those areas mapped as open habitat will, in fact be maintained as open habitat, in their entirety, and that the resources will be available to do this.

Turtle Doves

The Turtle Dove is the UK's fastest declining bird species and is threatened with global extinction (IUCN Red List of Endangered Species). Breeding populations, both in England and in Europe, have collapsed in recent decades and the decline is continuing. The latest UK Breeding Bird Survey data shows a 93% fall in breeding abundance between 1995 and 2014. The species is now included on the UK Red List of Conservation Concern. In recognition of this status the Turtle Dove is an RSPB priority species.

Turtle Doves are a migratory species, breeding in Europe and wintering in Africa. The species faces threat on migration and in its wintering grounds, however the latest research has shown the biggest threat is the loss and changes to habitat on the breeding grounds. The RSPB understand that Bramshill Plantation is known to provide important breeding habitat for this species. We strongly encourage that the management of the transitional habitat areas reflects the importance of providing thick, undisturbed scrub for nesting and bare / sparsely vegetated ground for feeding.

Habitat Regulations Assement

We understand that it is the Forestry Commission's view that, under regulation 61(1)(b) of the Conservation of Habitats and Species Regulations 2010 (as amended), the TBH Forest Design Plan could be considered as directly connected with or necessary to the management of the SPA. However, while elements of forestry management may be deemed necessary for site management, as discussed above there is a potential conflict between the primary objective of the plan, to provide a regular supply of quality timber to support the forestry sector, and the needs of the Annex I birds for which the SPA is designated. Therefore elements of the plan may not support the conservation objectives of the site, and may indeed conflict with them. To ensure that the management proposed within the plan does not have an adverse impact on the SPA and its features, we strongly recommend that the Plan is assessed via an Habitats Regulation Assessment, in particular to determine the extent of habitat available to the Annex I birds over the lifetime of the Plan (2018-2028), and to assess whether this is sufficient to meet the objectives of maintaining / restoring populations of the Annex I birds. A similar assessment should also be undertaken in respect of the SSSI interest features.

It is noted that the further detail related to conservation management will be provided in the Bramshill Forest SPA & SSSI Management Plan (FC 2017), however, unfortunately this document was not available for consideration as part of this consultation. We would welcome the opportunity to view this document, which is anticipated to provide some of the clarity which is currently lacking in the plan in relation to habitat management aimed as delivering for the features of the SSSI / SPA.

We trust that these comments are helpful. We would welcome further discussion regarding the management / restoration of the open habitats and how these can deliver for the Annex I bird species and other heathland associated species.

Forestry Commission Response to the RSPB

Many thanks for taking the time to comment on the Forest Plan for the Thames Basin Heaths. Your feedback is valuable and enables us to continue to improve our plans into the future.

The plan is a strategic document. The level of detail is a consequence of this and it is regrettable that the forthcoming SSSI plan was not available for comment as I feel this would have addressed many of your concerns.

Regarding the provision for suitable habitat for annexe 1 bird species, we are committed to maintaining and improving the condition of all our statutory conservation designations and are working closely with Natural England to this end.

A number of amendments have been made to the Plan following your response to ensure a minimum of 20% of the SPA area provides suitable habitat to support the SPA associated species over the course of this 10 year Plan.

We appreciate your concerns over the longer term plan for the site in terms of tree species selection and this will be an important issue to take into consideration in the future, forming part of our operational planning process designed to advance the objectives of the site.

Overall the plan is aiming to achieve a balance of multiple, often competing objectives and it is inevitable that some compromises have to be made. Forest systems are dynamic and as sustainable natural resource managers we need to accept this and embrace change whilst ensuring we fulfil our statutory responsibilities.



Forestry Commission (Forest Services and Forest Enterprise) should agree baseline tolerance thresholds for operations in each District beyond which exchange of letter/map or formal amendment is required. Unless otherwise specified or agreed by the Forestry Commission, amendment will be by formal revision of the plan.

	Adjustment to felling coupe boundaries (1)	Timing of Restocking	Changes to species	Windthrow clearance (2)	Changes to road lines (3)
FC Approval normally not required	0.5 ha or 5% of coupe - which-ever is less	Up to 2 plant- ing seasons after felling	Change within species group e.g. evergreen conifers; broadleaves	Up to 0.5ha	
Approval by exchange of letters and map	0.5ha to 2ha or 10% of coupe - whichever is less			0.5ha to 2ha - if mainly wind- blown trees > 2ha to 5ha in areas of low sensitivity	Additional felling of trees not agreed in plan Departures of >60m in either direction from centre line of road
Approval by formal plan amendment	> 2ha or 10% of coupe	Over 2 plant- ing seasons after felling	Change from specified native species Change between species groups	> 5ha	As above, depending on sensitivity

Notes on Tolerance Table

- 1. There are circumstances in which changes of less than 0.5 ha for example could have a dramatic visual effect. The above model does require a sensible approach to be taken by Forest Enterprise in notifying Forestry Commission when such cases arise. Local staff need to be sensitive to issues which may influence the situation (bearing in mind that small adjustments to felling coupes will not appear on the Public Register).
- 2. It is important that Forest Enterprise keep the FC informed about windblow clearance, which can be problematic in cases of public complaint, and in FC compliance monitoring. In some cases a modification of the proposals for the remaining area of the Plan may need to be submitted and approved. Clearance of blow should not require approval but will be needed for related standing trees.
- 3. It is recognised that roading proposals as marked on Road Plans are necessarily somewhat indicative, in that actual roading operations require to take account of features not always apparent at the time of roadline planning. Accordingly some leeway is acceptable to account for this.