



European Site Conservation Objectives: Supplementary advice on conserving and restoring site features

**Ebernoe Common Special Area of Conservation (SAC)
Site Code: UK0012715**



Bechstein's bat © Chris Damant

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Ebernoe Common SAC.

This advice should therefore be read together with the SAC Conservation Objectives available [here](#).

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England when developing, proposing or assessing an activity, plan or project that may affect this site.

This Supplementary Advice to the Conservation Objectives presents attributes which are ecological characteristics of the designated species and habitats within a site. The listed attributes are considered to be those that best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the Conservation Objectives. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The tables provided below bring together the findings of the best available scientific evidence relating to the site's qualifying features, which may be updated or supplemented in further publications from Natural England and other sources. The local evidence used in preparing this supplementary advice has been cited. The references to the national evidence used are available on request. Where evidence and references have not been indicated, Natural England has applied ecological knowledge and expert judgement. You may decide to use other additional sources of information.

In many cases, the attribute targets shown in the tables indicate whether the current objective is to 'maintain' or 'restore' the attribute. This is based on the best available information, including that gathered during monitoring of the feature's current condition. As new information on feature condition becomes available, this will be added so that the advice remains up to date.

The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulations Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Some, but not all, of these attributes can also be used for regular monitoring of the actual condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

These tables do not give advice about SSSI features or other legally protected species which may also be present within the European Site.

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email HDIRConservationObjectivesNE@naturalengland.org.uk

About this site

European Site information

Name of European Site	Ebernoe Common Special Area of Conservation (SAC)
Location	West Sussex
Site Map	The designated boundary of this site can be viewed here on the MAGIC website
Designation Date	1 April 2005
Qualifying Features	See section below
Designation Area	234.05 ha
Designation Changes	Extensions to Ebernoe Common SAC were designated on 10 December 2009
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Ebernoe Common The SSSI boundary is coincident with the SAC boundary
Relationship with other European or International Site designations	N/A

Site background and geography

Ebernoe Common is an extensive complex of ancient woodland and former wood pasture in West Sussex, five miles south-east of Haslemere. The site lies on the Cretaceous Weald Clay and falls within the Low Weald National Character Area ([NCA 121](#)). The central core of the site, approximately a third of the total area, forms Ebernoe Common National Nature Reserve.

It is a varied site with a range of woodland communities and age structures which have developed due to differences in underlying soils and past management. This range of conditions together with a long continuity of woodland cover has in turn resulted in the site supporting an outstanding diversity of species: Barbastelle and Bechstein's bats, which favour ancient woodland, breed in the site because it provides suitable roosting and feeding habitats. While Bechstein's feed exclusively in the woodland, Barbastelles commute into the surrounding countryside using the woodland corridors which branch out from the site. In addition, the native trees, particularly those with old growth characteristics, support rich lichen and fungal communities, including a number of rare and scarce species, and the woodland complex as a whole supports a diverse breeding bird assemblage.

About the qualifying features of the SAC

The following section gives you additional, site-specific information about this SAC's qualifying features. These are the natural habitats and/or species for which this SAC has been designated.

Qualifying habitats:

- **H9120 Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*); Beech forests on acid soils**

This Annex I type comprises beech *Fagus sylvatica* forests with holly *Ilex*, growing on acid soils, in a humid Atlantic climate. Sites of this habitat type often are, or were, managed as wood-pasture systems, in which pollarding of beech and oak *Quercus* spp. was common. This is known to prolong the life of these trees.

This habitat occurs on acid soils and falls within two NVC types:

- W14 *Fagus sylvatica* – *Rubus fruticosus* woodland
- W15 *Fagus sylvatica* – *Deschampsia flexuosa* woodland

Typical species include holly *Ilex aquifolium*, bracken *Pteridium aquilinum* and bramble *Rubus fruticosus*, with wavy hair-grass *Deschampsia flexuosa* in the most acidic areas. Epiphyte richness is a key factor in defining hyper-Atlantic forms of this Annex I type. British stands of this woodland type tend to contain a higher proportion of veteran trees than examples found in other parts of Europe. The biodiversity of many sites is enriched by the presence of assemblages of epiphytic lichens or saproxylic invertebrates. Notable species include lichens such as *Agonimia octospora* and invertebrates such as the beetle *Diplocoelus fagi*. The moss *Zygodon forsteri* is also strongly associated with this habitat in the UK.

H9120 is largely restricted by climatic factors to the western seaboard of Europe. It is extensive in the Armorican massifs of France and in northern Spain. There are close associations between the British examples and those found in Brittany and western Normandy. In the UK the native range of this Annex I type is restricted, and extensive stands on acid sites are rare outside south-east England. However, some notable outliers occur in south Wales.

Ebernoe Common has an extensive block of beech *Fagus sylvatica* high forest and former wood-pasture over dense holly *Ilex aquifolium*, and has a very rich epiphytic lichen flora, including *Agonimia octospora* and *Catillaria atropurpurea*. It represents Atlantic acidophilous beech forests in the south-eastern part of the habitat's UK range. The beech woodland is associated with other woodland types, open glades and pools, which contribute to a high overall diversity. The woods are important for a number of bat species, in particular S1323 Bechstein's bat *Myotis bechsteinii* and S1308 barbastelle *Barbastella barbastellus*.

Qualifying Species:

- **S1308 Barbastelle *Barbastella barbastellus***

The barbastelle is a medium-sized bat unlike any other in Europe. The fur is almost black, usually with very pale or golden brown tips to the hairs. The ears are very broad with the inner edges joined together across the forehead.

Barbastelle ecology is relatively poorly-known. In Europe it is believed to be mainly an upland and forest species; in the UK it seems to prefer wooded river valleys. The species forages in mixed habitats, usually over water. Barbastelles appear to select cracks and crevices in wood for breeding, mostly in old or damaged trees, but cracks and crevices in the timbers of old buildings may also be used. Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland or a complex of buildings. Caves and underground structures may be used for hibernation. The species is very sensitive to disturbance, together with the loss of roost-sites and food resources.

The barbastelle is one of the UK's rarest mammals. Few maternity roost sites are known in the UK. The great majority of other records come from caves or abandoned mines, which are important hibernation sites for a range of bat species. The barbastelle is widely distributed across southern England and across Wales but is likely to have been significantly under-recorded within its range. Individual bats are sometimes discovered in buildings during summer.

The barbastelle is distributed throughout Europe, except Iceland, Northern Ireland, Scotland, most of Scandinavia, Estonia and much of southern Europe. The highest population density is probably in central Europe. It is one of the rarest bats in western Europe, and is regarded as endangered in several countries. A population decrease has been reported over most of its European range.

A maternity colony of barbastelles *Barbastella barbastellus* utilises a range of tree roosts in Ebernoe Common. Maternity roost sites are usually in dead tree stumps, but the species appears to be present throughout the year, with individuals utilising a range of roost sites in tree holes and under bark.

- **S1323 Bechstein's bat *Myotis bechsteinii***

Bechstein's bat is a medium-sized species, with very long ears and a long, pointed, bare, pink face. It has shaggy light-to reddish-brown fur on its back and contrasting greyish white-tipped fur on its underside. The species is closely associated with mature deciduous woodland and appears to select old woodpecker holes or rot holes in trees for breeding. It also occurs in coniferous woodland in some areas. Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland. It is believed to hibernate in hollow trees and sometimes in underground localities.

It is one of the UK's rarest mammals, recorded from only a small number of sites in southern England and Wales. Very few maternity roosts are currently known, one of which is in a bat-box. The great majority of other records come from caves or abandoned mines, which are important hibernation sites for a range of bat species.

It is also one of the rarest bats in western Europe, and is regarded as endangered in several countries. A population decrease has been reported over most of its European range. The species occurs from the Iberian peninsula east to the Ukraine and Moldova. Local populations in southern England, Wales, southern Sweden and Bornholm mark the northern border of the range.

A maternity colony of Bechstein's bat is associated with the site. Roosts are mainly in old woodpecker holes in the stems of live mature oak *Quercus petraea* trees.

Site-specific seasonality of SAC feature

The table below highlights in grey those months in which significant numbers of each mobile qualifying feature are most likely to be present at the SAC during a typical calendar year. This table is provided as a general guide only.

Unless otherwise indicated, the months shown below are primarily based on information relating to the general months of occurrence of the feature in the UK. Where site-based evidence is available and has been used to indicate below that significant numbers of the feature are typically present at this SAC outside of the general period, the site-specific references have been added to indicate this.

Applicants considering projects and plans scheduled in the periods highlighted in grey would benefit from early consultation with Natural England given the greater scope for there to be likely significant effects that require consideration of mitigation to minimise impacts to qualifying features during the principal periods of site usage by those features. The months which are *not* highlighted in grey are not ones in which the features are necessarily absent, rather that features may be present in less significant numbers in typical years. Furthermore, in any given year, features may occur in significant numbers in months in which typically they do not. Thus, applicants should not conclude that projects or plans scheduled in months not highlighted in grey cannot have a significant effect on the features. There may be a lower likelihood of significant effects in those months which nonetheless will also require prior consideration.

Any assessment of potential impacts on the features must be based on up-to-date count data and take account of population trends evident from these data and any other available information. Additional site-based surveys may be required.

Feature	Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Barbastelle	Breeding												
Barbastelle	Hibernation												
Bechstein's bat	Breeding												
Bechstein's bat	Hibernation												

Table 1: Supplementary Advice for Qualifying Features: H9120. Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*); Beech forests on acid soils

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Extent and distribution of the feature	Extent of the feature within the site	Maintain the total extent of the feature.	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information. The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>For this feature, this attribute includes the extent of semi-natural wood-pasture mosaic area; tree'd area; the number of veteran trees (except through natural causes), including dead and living trees. Tree roots (particularly of veteran trees) may extend a considerable distance beyond the boundary of the site. A reduction of woodland/wood-pasture area - whether at the edge or in the middle of a site will reduce the core area where wood-pasture conditions are found - these support significant assemblages of species dependent on woodland conditions (e.g. lichens and bryophytes - being one example). Loss of any woodland area which fragments a site into different parts may interrupt the movement of species between the remaining part of the woodland, especially those with limited powers of dispersal.</p> <p>The vast majority of the site is woodland. However, a number of different woodland vegetation communities are present,</p>	This attribute will be periodically monitored as part of Natural England's site condition assessments

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>principally:</p> <ul style="list-style-type: none"> • W8 - <i>Fraxinus excelsior</i> - <i>Acer campestre</i> - <i>Mercurialis perennis</i> woodland • W10 - <i>Quercus robur</i> - <i>Pteridium aquilinum</i> - <i>Rubus fruticosus</i> woodland • W14 - <i>Fagus sylvatica</i> - <i>Rubus fruticosus</i> woodland • W15 - <i>Fagus sylvatica</i> - <i>Deschampsia flexuosa</i> woodland <p>The extent of individual woodland communities is not known so it is not possible to set a target for the extent of H9120 beech woodland. An up-to-date map of H9120 beech woodland is required.</p>	
Extent and distribution of the feature	Spatial distribution of the feature within the site	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	<p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. Fragmentation and loss of woodland and veteran trees in the past has meant there is a pressing need to maintain and increase the number of veteran trees and area of the habitat to support woodland dependent species and habitats. The best places to develop new woodland for biodiversity is adjacent to, buffering and linking existing sites from which colonisation of the relevant plants, animals (including decaying wood insects) and fungi can happen. This will increase the robustness of these populations making them more resilient to current and future pressures and stresses.</p> <p>See comments in 'Extent of the feature' attribute, above. The distribution of woodland communities is not known. An up-to-date map of H9120 beech woodland is required.</p>	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical	Vegetation community composition	Ensure the component vegetation communities of the feature are referable to and characterised by the following	This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and	This attribute will be periodically monitored as part of Natural England's site condition assessments

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
species)		National Vegetation Classification types: W14 <i>Fagus sylvatica</i> – <i>Rubus fruticosus</i> woodland W15 <i>Fagus sylvatica</i> – <i>Deschampsia flexuosa</i> woodland	vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC). Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature.	
Structure and function (including its typical species)	Vegetation structure - canopy cover	Maintain a canopy of open grown native trees with free crowns over between 50-90% of the site, except in Hoads Common which is wood pasture and where a canopy cover target is not suitable.	Measures of the value of tree cohort continuity should take into account species, distribution across the site and situation (open-grown versus shaded) as well as total tree numbers. Cohort continuity is an important measure of the condition of the veteran tree resource and its potential to retain its value in the long-term. Trees growing in a wooded situation (ie not open grown) may not develop into veterans of equal value to open grown individuals.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Vegetation structure - open space	Maintain areas of permanent/temporary open space within the woodland feature, typically to cover between 10-30% of area	Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. Having some open, sunlit and largely tree-less areas as part of the woodland community is often important to facilitate natural tree and shrub regeneration and also to provide supporting habitat for specialist woodland invertebrates, birds, vascular and lower plants. Such open space can be permanent or temporary and may consist of managed grazed areas, linear rides and glades, or naturally-produced gaps caused by disturbance events such as windthrow/fire/tree falling over/snow damage.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Vegetation structure - old growth	Maintain the extent and continuity of undisturbed, mature/old growth stands (typically comprising at least 20% of the feature at any one time)	Good woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a	This attribute will be periodically monitored as part of Natural England's site condition assessments

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		and the assemblages of veteran and ancient trees (typically >10 trees per hectare).	particular site, taking account of its known interest, history, past management and the landscape context. For this habitat type, old or over-mature elements of the woodland are particularly characteristic and important features, and their continuity should be a priority. See Annex 2 for the location of veteran trees in the central part of Ebernoe Common.	
Structure and function (including its typical species)	Vegetation structure - dead wood	Maintain the continuity and abundance of standing or fallen dead and decaying wood, typically between 30 - 50 m ³ per hectare of standing or fallen timber or 3-5 fallen trees >30cm per hectare, and >10 standing dead trees per hectare	Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. Dead and actively decaying wood, either as part of a standing tree or as a fallen tree on the woodland floor, is an important component of woodland ecosystems, and supports a range of specialist invertebrates, fungi, lichens and bryophytes, and associated hole-nesting birds and roosting bats, all of which may be very typical of the feature.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Vegetation structure - ancient/veteran trees	Restore at least a third of ancient/veteran trees in open locations or with open halo around them, with younger cohorts of successor trees (<100 years; 100-200 years) each present over 10% of the site.	Good woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. For this Annex 1 habitat type, individual trees of great age and/or size (veteran or ancient trees) are particularly characteristic and important features, and their continuity should be a priority. Protecting their root systems and the forest soils around them will also be important. See Annex 2 for the location of veteran trees in the central part of Ebernoe Common.	This attribute will be periodically monitored as part of Natural England's site condition assessments

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Target set to Restore because a number of trees require halving.	
Structure and function (including its typical species)	Vegetation structure - age class distribution	Maintain at least 3 age classes (pole stage/ medium/ mature) spread across the average life expectancy of the commonest trees.	Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Vegetation structure - shrub layer	Maintain an understorey of shrubs and trees covering at least 20% of the site, excluding Hoads Common (this will vary with light levels, grazing and site objectives).	Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Vegetation structure - woodland edge	Maintain a graduated woodland edge into adjacent semi-natural open habitats, other woodland/ wood-pasture types or scrub.	Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. Woodland edge is defined as being the transitional zone between the forest feature and adjacent but different habitat types - the best woodland edges will have a varied structure in terms of height and cover. Many typical forest species make regular use of the edge habitats for feeding due to higher herb layer productivity and larger invertebrate populations.	
Structure and function (including its typical species)	Tree and shrub species composition	Maintain a canopy and understorey of which 95% is composed of site native trees and shrubs, such as beech, oak, ash, holly and hazel	Native trees and shrubs in general support a greater diversity of associated species than non-native species, especially amongst groups of invertebrates which depend directly on trees for food and shelter. There are many plants and animals which use or co-exist with non-native trees, but many rare and threatened woodland species are specialists adapted to one or a few native trees or shrub species (birches, willows and oaks, are examples of trees that host many specialist insect species).	This attribute will be periodically monitored as part of Natural England's site condition assessments

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Browsing and grazing by herbivores	Maintain browsing/grazing (e.g. by livestock) to sufficient levels to allow tree seedlings and saplings the opportunity to exceed browse height, and which Maintain the characteristic structure of the woodland feature	Herbivores, especially deer, are an integral part of woodland ecosystems. They are important in influencing woodland regeneration, composition and structure and therefore in shaping woodland wildlife communities. In general, both light grazing and browsing is desirable to promote both a diverse woodland structure and continuous seedling establishment. Short periods with no grazing at all can allow fresh natural regeneration of trees, but a long-term absence of herbivores can result in excessively dense thickets of young trees which shade out ground flora and lower plant species. However, heavy grazing by deer or sheep prevents woodland regeneration, and can cause excessive trampling and/or poaching damage, canopy fragmentation, heavy browsing, barkstripping and a heavily grazed sward.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Regeneration potential	Maintain the potential for sufficient natural regeneration of desirable trees and shrubs; typically tree seedlings of desirable species (measured by seedlings and <1.3m saplings - above grazing and browsing height) should be visible in sufficient numbers in gaps, at the wood edge and/or as regrowth as appropriate ;	The regeneration potential of the woodland feature must be maintained if the wood is to be sustained and survive, both in terms of quantity of regeneration and in terms of appropriate species. This will include regeneration of the trees and shrubs from saplings or suckers, regrowth from coppice stools or pollards, and where appropriate planting. Browsing and grazing levels must permit regeneration at least in intervals of 5 years every 20. The density of regeneration considered sufficient is less in parkland sites than in high forest. Regeneration from pollarding of veteran trees should be included where this is happening.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Key structural, influential and/or distinctive species	Restore the abundance of the assemblages listed to enable each of them to be a viable component of the Annex I habitat feature: <ul style="list-style-type: none"> • Outstanding lichen assemblage • Outstanding fungi assemblage 	Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include: <ul style="list-style-type: none"> • Structural species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition'). • Influential species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, 	This attribute will be periodically monitored as part of Natural England's site condition assessments Davey (2005)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>predators or other species with a significant functional role linked to the habitat)</p> <ul style="list-style-type: none"> • Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC. <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary. The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p> <p>Target set to Restore because light levels reaching trees on the slope north of Furnace pond need to be increased (so that the area remains suitable for its important lichen assemblage) by reducing the holly understorey.</p>	
Structure and function (including its typical species)	Invasive, non-native and/or introduced species	Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the feature	Invasive or introduced non-native species are a serious potential threat to the biodiversity of native and ancient woods, because they are able to exclude, damage or suppress the growth of native tree, shrub and ground species (and their associated typical species), reduce structural diversity and prevent the natural regeneration of characteristic site-native species. Once established, the measures to control such species may also impact negatively on the features of interest (e.g. use of broad spectrum pesticides). Such species can include Rhododendrons, snowberry, Japanese knotweed, giant hogweed and Himalayan balsam, for example. Similarly, this would include pheasants, rabbits and non-native invertebrate 'pest' species.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to	Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		within typical values for the habitat.	has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.	
Structure and function (including its typical species)	Root zones of ancient trees	Maintain the soil structure within and around the root zones of the mature and ancient tree cohort in an un-compacted condition	<p>The management of land within and around forest habitats which are characterised by ancient trees can be crucial to their individual welfare and long-term continuity, and the landscape they are part of can be just as or even more important. The condition of the soil surrounding such trees will affect their roots, associated mycorrhizal fungi and growth. Plants have difficulty in compacted soil because the mineral grains are pressed together, leaving little space for air and water which are essential for root growth. Unless carefully managed, activities such as construction, forestry management and trampling by grazing livestock and human feet during recreational activity may all contribute to excessive soil compaction around ancient trees.</p> <p>See Annex 2 for the location of veteran trees in the central part of Ebernoe Common.</p>	
Supporting processes (on which the feature relies)	Hydrology	At a site, unit and/or catchment level (as necessary, Maintain natural hydrological processes to provide the conditions necessary to sustain the feature within the site	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. Disruption/ damage to hydrological processes could be caused by activities at some distance from the site boundary. E.g. through extraction of ground or surface waters; diverting or damming river channels; pollution of water source; channel alignment that disrupts natural geomorphological processes; tunnelling etc.</p> <p>Variation in soil moisture across the site is one of the factors responsible for the wide diversity of vegetation types.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature relies)	Illumination	Ensure artificial light is maintained to a level which is unlikely to affect natural phenological cycles and processes to the detriment of the feature and its typical species at this site.	Woodland biodiversity has naturally evolved with natural patterns of light and darkness, so disturbance or modification of those patterns can influence numerous aspects of plant and animal behaviour. For example, light pollution (from direct glare, chronically increased illumination and/or temporary, unexpected fluctuations in lighting) can affect animal navigation, competitive interactions, predator-prey relations, and animal physiology. Flowering and development of trees and plants can also be modified by un-natural illumination which can disrupt natural seasonal responses.	Downs <i>et al.</i> (2003) Stone <i>et al.</i> (2009)
Version Control N/A				
Variations from national feature-framework of integrity-guidance: N/A				

Table 2: Supplementary Advice for Qualifying Features: S1308. *Barbastella barbastellus*; Barbastelle bat

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	Population abundance - hibernation site	Restore the abundance of the hibernating population, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (generally at least 10 years). The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment.</p> <p>Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			possible, local Natural England staff can advise that the figures stated are the best available.	
Population (of the feature)	Population abundance - maternity colony	Restore the abundance of the breeding population to a level which is above 100 adult females.	<p>This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (generally at least 10 years). The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment.</p> <p>Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Greenaway (2008)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			possible, local Natural England staff can advise that the figures stated are the best available.	
Supporting habitat: extent and distribution	Distribution of supporting habitat	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site	<p>A contraction in the range, or geographic spread, of the feature (and its component vegetation) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for this feature and this may affect its viability.</p> <p>See comments in 'Extent of supporting habitat', above.</p>	
Supporting habitat: extent and distribution	Extent of supporting habitat	Maintain the total extent of the habitats which support the feature (at 234.05 ha	<p>In order to contribute towards the objective of achieving an overall favourable conservation status of the feature at a UK level, it is important to maintain or if appropriate restore the extent of supporting habitats and their range within this SAC. The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending on the nature, age and accuracy of data collection, and may be subject to periodic review in light of improvements in data.</p> <p>The target has been set to the area of the whole site (234.05 ha) because barbastelle use a range of habitats throughout the SAC. Maternity roosts have been located across the site, generally in mature trees. They are usually in cracks and splits of damaged trees or behind plates of loose bark. It is likely that trees within the SAC are also used by barbastelle during the winter.</p> <p>The woodland also provides foraging habitat for barbastelle throughout the year. Barbastelle are winter active bats and can be found foraging right through the winter months at suitable</p>	Greenaway (2008)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			temperatures, usually within about a kilometre of their roosts. During the summer most foraging occurs outside of the site when the SAC principally provides a number of commuting routes.	
Supporting habitat: structure/function	Flightlines from roost into surrounding habitat and foraging areas	Restore the presence, structure and quality of any linear landscape features which function as flightlines. Flightlines should remain unlit, functioning as dark corridors.	<p>Barbastelle bats may forage up to 5km from their maternity roosts, though some individuals in less favourable habitat may forage further to reach suitable feeding grounds (Greenaway, 2001). Generally forages within woodland canopy and margins, though will feed in more open areas i.e. orchards, suburban parks. Commutes along linear landscape features such as woodland edge, hedgerows etc, though will cross extensive open areas (i.e. arable fields) to reach foraging grounds and may feed to a certain extent within these more open areas. Typical flightlines used by these species include linear hedgerows, waterways, blocks of scrub, wooded rides and tracks. Flightlines will extend beyond the designated site boundary into the wider local landscape.</p> <p>Ebernoe Common lies in a well wooded landscape. The Mens SSSI/SAC, which lies approximately 4km to the south-east of Ebernoe, is a similar site that also supports barbastelle. There is continuous woodland cover between the two sites and it is likely that the bat populations are linked. There are two other SSSI woodlands in close proximity to Ebernoe Common: Chiddingfold Forest SSSI is less than 2km to the north and Northpark copse to Snapelands Copse is less than 5km to the south-west.</p> <p>See Annex 1 for key foraging areas and commuting routes identified by radio-tracking. Unbroken dense strips of mature woodland with a shaded central track or ride (along which bats can fly) provide ideal flightlines.</p> <p>Target set at Restore because some flightlines are fragmented e.g. by breaks in hedgerows. Suggestions for improving connectivity are given in Greenaway (2004a).</p>	<p>Greenaway (2004)</p> <p>Greenaway (2008)</p> <p>Natural England (2015b)</p> <p>Zeale <i>et al.</i> (2012)</p> <p>Greenaway (2001)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/function	Supporting off-site habitat (foraging areas)	Restore any core areas of feeding habitat outside of the SAC boundary that are critical to Barbastelles during their hibernation and breeding period	<p>Roost choice, and the presence of bats within the SAC, is likely to be influenced by the site's ability to provide bats with food and shelter. Key feeding areas around a roost, and the commuting routes (or flight-lines) between them, will be an important element of sustaining the SAC population.</p> <p>Radio-tracking and other surveys have demonstrated significant use of the wider countryside around the SAC for foraging and commuting during the breeding season. There are also likely to be roost sites outside of the SAC woodland, particularly for male barbastelle. In addition to the SACs containing their roosting sites the bats also require access to habitats outside the boundary of the SACs. This habitat is integral to supporting bats associated with the SACs and is often referred to as functionally-linked habitat. Such functionally linked habitat includes the following:</p> <ul style="list-style-type: none"> • Flightlines – these are key commuting routes from roosts to foraging (or feeding) areas used by the bats. The barbastelle flightlines around Ebernoe Common and The Mens have been investigated through survey and are shown in Map 1. The routes to Singleton and Cocking Tunnels are less well known. • Foraging areas – these are the areas of land where bats feed. Barbastelle bats can forage 10-15 kilometres from the roosting sites and they prefer wet meadows and riparian habitats. Bechstein's tend to forage in and around the woodland where they roost with limited outward travel. <p>The land within the West Weald which encompasses Ebernoe Common SAC; The Mens SAC and Singleton & Cocking Tunnels SAC should be regarded as a single landscape utilised by bats from all three SACs.</p>	<p>South Downs National Park & Natural England (2015) Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol</p> <p>https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf</p>
Supporting habitat: structure/function	Soils, substrate and nutrient	Maintain the properties of the underlying soil types, including structure, bulk density, total	Soil supports basic ecosystem function and is a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
function	cycling	carbon, pH, soil nutrient status and fungal: bacterial ratio, within typical values for the supporting habitat	which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with the supporting habitat of this Annex II feature.	
Supporting habitat: structure/function	Woodland site - maternity colony	Maintain the extent and structural diversity of supporting woodland habitat used for feeding and foraging	The structural diversity of supporting habitat will be important to maintain optimal feeding and foraging conditions in close proximity to maternity roosts; key aspects of woodland structure will include good canopy cover (typically 50-90%), an abundance of standing and fallen dead wood, areas of permanent and open space and the retention of open water and/or wetland features.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Supporting processes (on which the feature and/or its supporting habitat relies)	Adaptation and resilience	Restore the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site	<p>This recognises the increasing likelihood of supporting habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. Such environmental changes may include changes in sea levels, precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary. Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> <p>The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being low, taking into account the sensitivity, fragmentation, topography and management of its supporting habitats. This means that this site is considered to be vulnerable overall but are a lower priority for further assessment and action. Individual species may be more or less vulnerable than their supporting habitat itself. In many cases, change will be inevitable so appropriate</p>	<p>Natural England (2015a)</p> <p>Sherwin <i>et al.</i> (2013)</p> <p><u>Voigt <i>et al.</i> (2011)</u></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>monitoring would be advisable.</p> <p>Target set at Restore because some flightlines are fragmented e.g. by breaks in hedgerows. Suggestions for improving connectivity are given in Greenaway (2004a).</p>	
Supporting processes (on which the feature and/or its supporting habitat relies)	Air quality	Maintain or, where necessary, restore concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	<p>The supporting habitat of this feature is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition (including food-plants) and reducing supporting habitat quality and population viability of this feature. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p> <p>Target includes Restore because the nitrogen deposition critical load is exceeded for broadleaved deciduous woodland supporting habitat.</p>	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk).
Supporting processes (on which the feature and/or its supporting habitat relies)	Conservation measures	Restore the management measures (either within and/or outside the site boundary as appropriate) which are necessary to Restore the structure, functions and supporting	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>English Nature (2003)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		processes associated with the feature and/or its supporting habitats.	<p>Plan, site management strategies or plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.</p> <p>Management measures are required both within and outside the SAC boundary (compare Bechstein's bat, Table 3).</p> <p>Within the SAC, disturbance to favoured roost areas, which in barbastelle tend to occur in the quieter areas of woodlands (Greenaway 2008), needs to be minimised. In the longer term a continuing supply of roost sites is needed to replace those that become unsuitable. This will require management of woodland structure and retention of the full range of tree age classes.</p> <p>Radio-tracking and other surveys have demonstrated significant use of the wider countryside around Ebernoe Common for foraging and commuting during the breeding season. There are also likely to be roost sites outside of the SAC woodland, particularly for male barbastelle.</p> <p>Barbastelle commute long distances to foraging areas (see Annex 1 for key foraging areas and commuting routes identified by radio-tracking) and so appropriate management is required over a large area. The barbastelle is a specialist predator on small Lepidoptera and the principal foraging areas used by the Ebernoe nursery colony are the flood plains of rivers and streams together with woodlands in proximity to these watercourses. Unbroken dense strips of mature woodland with a shaded central track or ride (along which bats can fly) provide ideal flightlines.</p> <p>A range of management measures are required in the wider countryside to maintain and restore foraging areas and commuting routes, such as hedgerow planting and low intensity pasture and hedgerow management. In addition, work has been undertaken with the South Downs National Park to ensure that barbastelle are taken into account in relation to decision-making.</p>	<p>Greenaway (2004)</p> <p>Greenaway & Hill (2004)</p> <p>Greenaway (2008)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Target set at Restore because some flightlines are fragmented e.g. by breaks in hedgerows. Suggestions for improving connectivity are given in Greenaway (2004a).	
Supporting processes (on which the feature and/or its supporting habitat relies)	Disturbance from human activity	Control and minimise human access to roost sites	<p>Site should be secured against unauthorised access, which can result in disturbance to bats at critical times of year and which can affect their population viability and use of the site. Grilles on site access points should be maintained where present.</p> <p>The location of roosts is often not known (roosts are well hidden in trees and there is considerable movement between different roosts, both within and between seasons). Management for barbastelle should therefore aim to maintain areas of woodland with little/no disturbance since favoured roost areas tend to occur in the quieter areas of woodlands (Greenaway 2008),</p>	Greenaway (2008)
Supporting processes (on which the feature and/or its supporting habitat relies)	Water quantity/ quality	Where the feature or its supporting habitat is dependent on surface water and/or groundwater maintain water quality and quantity to a standard which provides the necessary conditions to support the feature.	<p>For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed to reflect the ecological needs of the species feature. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p> <p>The principal foraging areas used by the Ebernoe nursery colony are the flood plains of rivers and streams together with woodlands in proximity to these watercourses. The structure and diversity of floodplain habitats, particularly grasslands, and consequently their invertebrate populations depend on good water quality. A number of aquatic invertebrates also depend</p>	Greenaway (2004)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			on good water quality.	
Version Control: N/A				
Variations from national feature-framework of integrity-guidance: Maternity and hibernation roosts are within trees so attributes for roosts within buildings have been removed.				

Table 3: Supplementary Advice for Qualifying Features: S1323. *Myotis bechsteinii*; Bechstein's bat

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	Population abundance - hibernation site	Maintain the abundance of the hibernating population, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	See explanatory notes for this attribute in Table 1 above.	
Population (of the feature)	Population abundance - maternity colony	Maintain the abundance of the breeding population at a level which is above 152 adult females, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	See explanatory notes for this attribute in Table 1 above. Population estimated from acoustic lure trapping and radio tagging undertaken during 2001-2003.	This attribute will be periodically monitored as part of Natural England's site condition assessments Greenaway & Hill (2005)
Supporting habitat: extent and distribution	Distribution of supporting habitat	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for this feature and this may affect its viability. Foraging and roosting sites are spread across the site. The vast majority of the site is woodland.	Bat Conservation Trust (2013) Flanders (2005) Greenaway (2006) Greenaway (2007) Greenaway & Hill (2004) Murphy (2006)
Supporting habitat: extent and distribution	Extent of supporting habitat	Maintain the total extent of the habitats which support the feature at 234.05 ha.	In order to contribute towards the objective of achieving an overall favourable conservation status of the feature at a UK level, it is important to maintain or if appropriate restore the extent of supporting habitats and their range within this SAC. The information available on the extent and distribution of supporting habitat used by the feature may be approximate	Bat Conservation Trust (2013) Flanders (2005) Greenaway (2006)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>depending on the nature, age and accuracy of data collection, and may be subject to periodic review in light of improvements in data.</p> <p>Foraging and roosting sites are spread across the site and so the target has been set to the area of the whole site (234.05 ha). The vast majority of the site is woodland.</p>	<p>Greenaway (2007)</p> <p>Greenaway & Hill (2004)</p> <p>Murphy (2006)</p>
Supporting habitat: structure/function	Flightlines from roost into surrounding habitat and foraging areas	Restore the presence, structure and quality of any linear landscape features which function as flightlines. Flightlines should remain unlit, functioning as dark corridors.	<p>Bechstein's: Bechstein's bats don't tend to range far from their roosts, generally up to a maximum distance of 1-2.5km, usually closer to 1km (Dietz et al 2009). Though, a few breeding females may choose to roost in hedgerow trees, which have connections to the main woodland habitat. Generally forages within deciduous woodland which contain water bodies, occasionally feeding along woodland edge, treelines and hedgerows. Bechstein's bat generally commutes along linear landscape features such as woodland edge, hedgerows, however, they will cross open fields to reach roost sites and foraging areas. Flightlines will extend beyond the designated site boundary into the wider local landscape.</p> <p>See comments on movements in 'Conservation Measures' attribute, above.</p> <p>Ebernoe Common lies in a well wooded landscape. The Mens SSSI/SAC, which lies approximately 4km to the south-east of Ebernoe, and there is continuous woodland cover between the two sites and it is likely that the bat populations are linked. There are two other SSSI woodlands in close proximity to Ebernoe Common: Chiddingfold Forest SSSI is less than 2km to the north and Northpark copse to Snapelands Copse is less than 5km to the south-west.</p> <p>Target set to Restore because some flightlines are fragmented e.g. by breaks in hedgerows.</p>	Natural England (2015)
Supporting habitat: structure/function	Supporting off-site habitat (foraging)	Restore any core areas of feeding habitat outside of the SAC boundary that are critical to Bechstein's Bat during their	Roost choice, and the presence of bats within the SAC, is likely to be influenced by the site's ability to provide bats with food and shelter. Key feeding areas around a roost, and the commuting routes (or flight-lines) between them, will be an	South Downs National Park & Natural England (2015) Sussex Bat Special Area of Conservation Planning and Landscape Scale

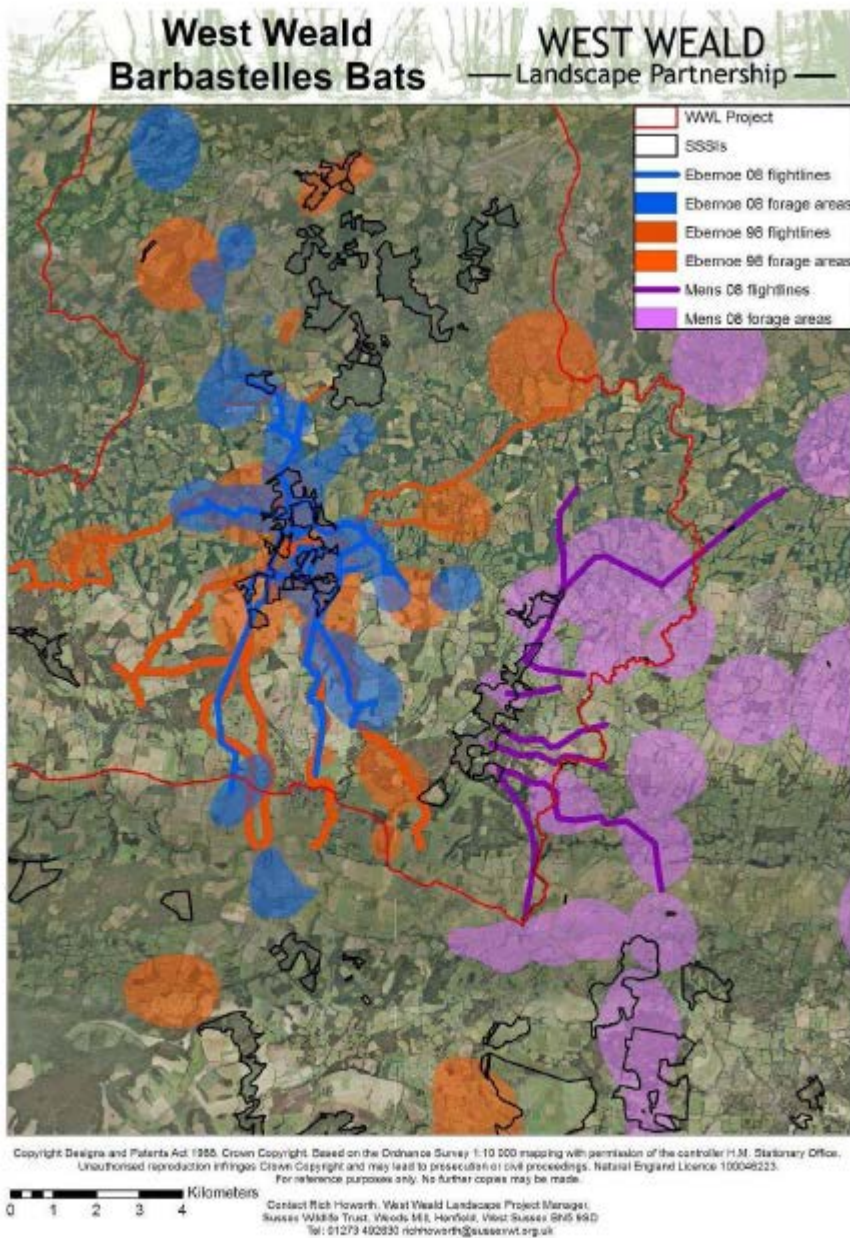
Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
	areas)	breeding and hibernation period	<p>important element of sustaining the SAC population.</p> <p>Radio-tracking and other surveys have demonstrated significant use of the wider countryside around the SAC for foraging and commuting during the breeding season. In addition to the SACs containing their roosting sites the bats also require access to habitats outside the boundary of the SACs. This habitat is integral to supporting bats associated with the SACs and is often referred to as functionally-linked habitat. Such functionally linked habitat includes the following:</p> <ul style="list-style-type: none"> • Flightlines – these are key commuting routes from roosts to foraging (or feeding) areas used by the bats. The barbastelle flightlines around Ebernoe Common and The Mens have been investigated through survey and are shown in Map 1. The routes to Singleton and Cocking Tunnels are less well known. • Foraging areas – these are the areas of land where bats feed. Barbastelle bats can forage 10-15 kilometres from the roosting sites and they prefer wet meadows and riparian habitats. Bechstein's tend to forage in and around the woodland where they roost with limited outward travel. <p>The land within the West Weald which encompasses Ebernoe Common SAC; The Mens SAC and Singleton & Cocking Tunnels SAC should be regarded as a single landscape utilised by bats from all three SACs.</p>	<p>Enhancement Protocol</p> <p>https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf</p>
Supporting habitat: structure/function	Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, within typical values for the supporting habitat	Soil supports basic ecosystem function and is a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with the supporting habitat of this Annex II feature.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/function	Woodland site - maternity colony	Maintain the extent and structural diversity of supporting woodland habitat used for feeding and foraging	The structural diversity of supporting habitat will be important to maintain optimal feeding and foraging conditions in close proximity to maternity roosts; key aspects of woodland structure will include good canopy cover (typically 50-90%), an abundance of standing and fallen dead wood, areas of permanent and open space and the retention of open water and/or wetland features.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Supporting processes (on which the feature and/or its supporting habitat relies)	Adaptation and resilience	Maintain the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site	See explanatory notes for this attribute in Table 1 above. The protected site is limited woodland core area where breeding colonies are known to exist. The bats, however, rely on commuting and foraging habitat outside of the site and this needs to be better understood, protected and appropriately managed. It would also be useful to understand how this site relates to other bat SACs in the southern part of the UK to ensure that they and the connecting habitats are managed appropriately to maintain favourable populations.	Natural England (2015) Sherin et al. (2013) Voigt et al. (2011)
Supporting processes (on which the feature and/or its supporting habitat relies)	Air quality	Maintain or, where necessary, restore concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	See explanatory notes for this attribute in Table 1 above. Target includes Restore because the nitrogen deposition critical load is exceeded for broadleaved deciduous woodland supporting habitat.	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk).
Supporting processes (on which the feature and/or its supporting habitat relies)	Conservation measures	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to Maintain the structure, functions and supporting processes associated with the feature and/or its supporting habitats.	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, site management strategies or plans, the Views about Management Statement for the underpinning SSSI and/or management agreements. Bechstein's bat is almost exclusively a woodland bat, both foraging and roosting within woodland. Radio-tracking studies	Bat Conservation Trust (2013) English Nature (2003) Flanders (2005) Greenaway (2006) Greenaway (2007) Greenaway & Hill (2004)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>have shown this is the case at Ebernoe Common (Murphy 2006). Management for Bechstein's bat is therefore largely restricted to within the site (compare barbastelle, Table 2). Woodland management to maintain a diverse structure with a complete range of tree age classes within the site will ensure it continues to provide suitable foraging areas and a range of roost sites.</p> <p>The maternity roosts of Bechstein's bats occur in deep tree cavities, usually in oak and predominantly in old woodpecker holes, with rot holes and splits also used. Colonies require several suitable roosts within their territory and switch roosts regularly, often splitting into groups to occupy a number of smaller sites. Individual roost sites can be long-lived and used over many years, but in the long term a supply of roost sites is required to replace those that become unsuitable. It is likely that trees within the SAC are also used by Bechstein's bats during the winter.</p> <p>Radio-tracking shows that adult females and young bats spend the majority of their time within the site. However, enhancing connections to isolated woodland patches (e.g. through hedgerow planting or less intensive hedgerow management) or improving structural diversity in neighbouring woodland areas would increase the extent of foraging habitat and number of roost sites available to the colony. This is also likely to benefit male bats which tend to range more widely and spend more time outside of the site.</p>	Murphy (2006)
Supporting processes (on which the feature and/or its supporting habitat relies)	Disturbance from human activity	Control and minimise human access to roost sites	<p>Site should be secured against unauthorised access, which can result in disturbance to bats at critical times of year and which can affect their population viability and use of the site. Grilles on site access points should be maintained where present.</p> <p>The location of roosts is not fully known since roosts are well hidden in trees (although some roosts are much longer-lived than those for barbastelle, see Table 2 above). Where roosts are known then access should not be encouraged in their immediate surroundings.</p>	Greenaway & Hill (2004)

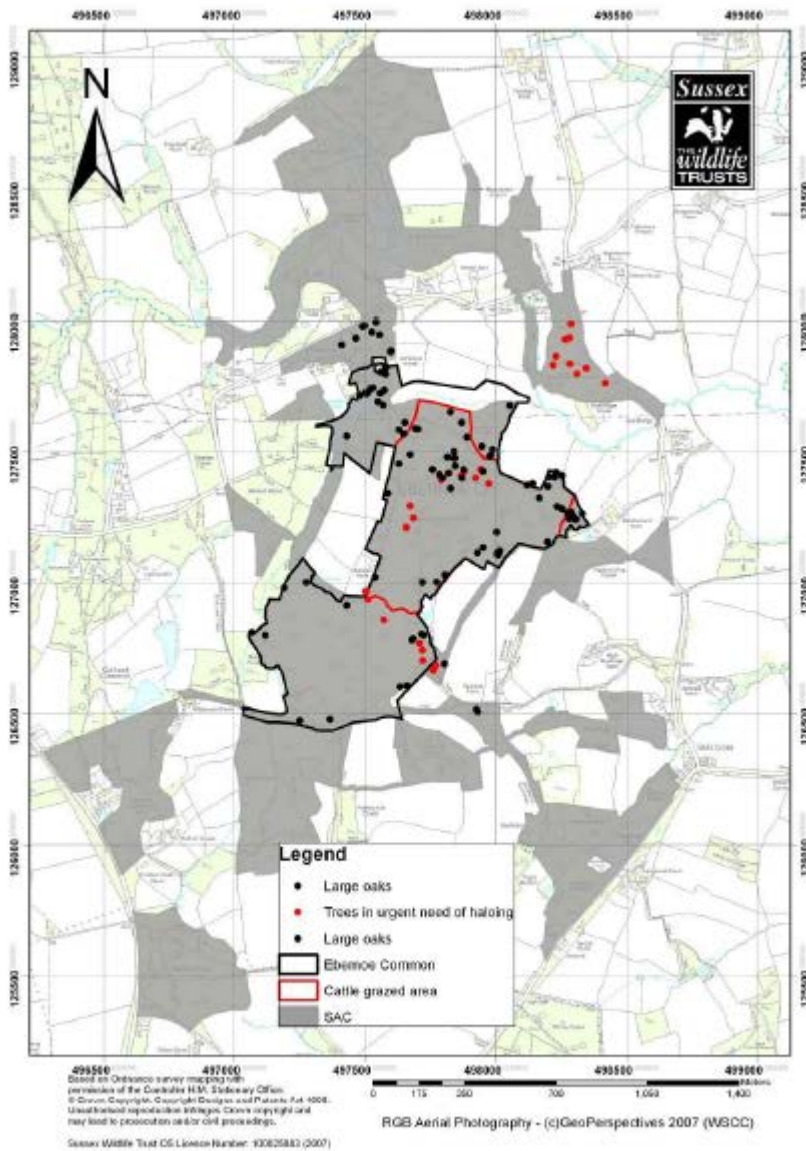
Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature and/or its supporting habitat relies)	Water quantity/ quality	Where the feature or its supporting habitat is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature [adviser to provide site-specific standards where available].	<p>For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed to reflect the ecological needs of the species feature. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p> <p>Bechstein's bat feeds almost exclusively within woodland. However, small streams with at least some water in summer are usually a feature of nursery roost woodlands (Greenaway & Hill 2004) and it seems that the presence of water (ponds and/or streams) is important for drinking and foraging.</p>	<p>Greenaway & Hill (2004)</p> <p>Natural England (2015)</p>
Version Control Advice last updated:				
Variations from national feature-framework of integrity-guidance: Maternity and hibernation roosts are within trees so attributes for roosts within buildings have been removed.				

Annex 1: Barbastelle flightlines and forage areas in 1996 and 2008



Map 1. Barbastelle Bat flight-lines and forage areas in 1998 & 2008

Annex 2: Veteran trees in the central section of Ebernoe Common



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