



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

**Butser Hill Special Area of Conservation (SAC)
Site Code: UK0030103**



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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Butser Hill 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	Butser Hill Special Area of Conservation (SAC)
Location	Hampshire
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	238.66 hectares
Designation Changes	Not applicable
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)	Butser Hill SSSI
Relationship with other European or International Site designations	Not applicable.

Site background and geography

Butser Hill is situated on the east Hampshire chalk which forms part of the South Downs. Much of the site consists of sheep's-fescue – meadow oat-grass (*Festuca ovina* – *Helictotrichon pratense*) grassland. The site has a varied range of slope gradients and aspects which has a strong influence on the vegetation composition. A particular feature of the site is its lower plant assemblage. It has a rich chalk grassland lichen flora and also supports the distinctive *Scapanietum asperae* or southern hepatic mat association of leafy liverworts and mosses on north-facing chalk slopes. This association is very rare in the UK and Butser Hill supports the largest known example. The site exhibits various transitions between semi-natural dry grassland, chalk heath, mixed scrub and yew *Taxus baccata* woods.

The coombes of the south-east flank of Butser Hill support dense yew woodland in association with scrub and chalk grassland. The yew is regenerating into the grassland and shows the classic interaction of these habitats in relation to grazing pressure.

Butser Hill sits within the South Downs National Character Area ([NE432](#)), a 'whale-backed' spine of chalk stretching from the Hampshire Downs in the west to the coastal cliffs of Beachy Head in East Sussex. The majority of the area falls within the [South Downs National Park](#), a recognition of its natural beauty and importance for access and recreation, and allowing for local decision making processes to manage this nationally important area. The South Downs NCA is an extremely diverse and complex landscape with considerable local variation representing physical, historical and economic influences; much of it has been formed and maintained by human activity, in particular in agriculture and forestry.

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:

- **H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)**

Festuco-Brometalia grasslands are found on thin, well-drained, lime-rich soils associated with chalk and limestone. They occur predominantly at low to moderate altitudes in England and Wales. Most of these calcareous grasslands are maintained by grazing. A large number of rare plants are associated with this habitat, including purple milk-vetch *Astragalus danicus*, dwarf sedge *Carex humilis*, spotted cat's-ear *Hypochaeris maculata*, spring cinquefoil *Potentilla tabernaemontani*, pasque flower *Pulsatilla vulgaris* and bastard-toadflax *Thesium humifusum*. The invertebrate fauna is also noteworthy, and includes rarities such as the adonis blue *Lysandra bellargus* and silver-spotted skipper *Hesperia comma*.

This habitat includes various forms of calcareous grassland referable in European terms to the *Mesobromion* and *Xerobromion* alliances. All forms of *Festuco-Brometalia* grassland comprise mixtures of grasses and herbs, in which there is at least a moderate representation of calcicolous species. The structural and floristic characteristics of the habitat are strongly influenced by climatic factors and management practices, in particular the intensity of grazing.

Butser Hill is situated on the east Hampshire chalk which forms part of the South Downs. Much of the site consists of CG2 sheep's-fescue – meadow oat-grass *Festuca ovina* – *Avenula pratense* grassland. The site has a varied range of slope gradients and aspects which has a strong influence on the vegetation composition. A particular feature of the site is its lower plant assemblage. It has the richest terricolous lichen flora of any chalk grassland site in England, and also supports the distinctive *Scapanietum asperae* or southern hepatic mat association of leafy liverworts and mosses on north-facing chalk slopes. This association is very rare in the UK and Butser Hill supports the largest known example. The site exhibits various transitions between semi-natural dry grassland, chalk heath, mixed scrub and 91J0 yew *Taxus baccata* woods.

- **H91J0 *Taxus baccata* woods of the British Isles; Yew-dominated woodland**

Yew *Taxus baccata* woodland occurs on shallow, dry soils usually on chalk or limestone slopes, but in a few areas stands on more mesotrophic soils are found. The habitat is classified as NVC type W13 *Taxus baccata* woodland. Within this community yew tends to be overwhelmingly dominant and is usually associated with a very sparse shrub and tree layer. Only a few species, such as dog's mercury *Mercurialis perennis*, can survive beneath the dense shade cast by the canopy of mature yew trees. Association with beech *Fagus sylvatica* and holly *Ilex aquifolium* is less common than in mainland Europe.

Ecological variation arises according to the nature of the yew wood. In the south this type may be either the senescent phase of beech woodland supporting clusters of yew after the fall of beech, or primary woodland developing on unstable slopes. Very locally, box *Buxus sempervirens* may occur below the yew. Eventually individual ash *Fraxinus excelsior* or beech trees may grow through in gaps to recreate an overstorey. More northerly examples tend to be associated with ash and elm *Ulmus* spp., and in these situations yew is more likely to remain as the main overstorey species.

The combes of the south-east flank of Butser Hill support dense yew *Taxus baccata* woodland in association with scrub and chalk grassland. The yew is regenerating into the grassland and shows the classic interaction of these habitats in relation to grazing pressure.

Qualifying Species:

None

Table 1: Supplementary Advice for Qualifying Features: H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone

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 on suitable areas of calcareous substrate (excluding areas occupied by long established woodland).	<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.</p> <p>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.</p> <p>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>	This attribute will be periodically monitored as part of Natural England's site condition assessments .
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.</p> <p>This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction. These fragments also have a greater amount of open edge habitat which will differ in</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)
			the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature.	
Structure and function (including its typical species)	Vegetation community composition	<p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types:</p> <p>CG2 <i>Festuca ovina</i> – <i>Avenula pratensis</i> grassland</p> <p>CG3 <i>Bromus erectus</i> grassland</p> <p>CG6 <i>Avenula pubescens</i> grassland</p> <p>Juniper Scrub and species rich examples of mixed calcareous scrub including areas referable to W21 <i>Crataegus monogyna</i> - <i>Hedera helix</i> scrub and W22 <i>Prunus spinosa</i> - <i>Rubus fruticosus</i> scrub communities.</p>	<p>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 vegetation management.</p> <p>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.</p> <p>This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>Though part of the feature, excessive scrub cover is undesirable. Scrub should not obscure the definition and form of the valley or obstruct access to valley floor deposits.</p>	
Structure and function (including its typical species)	Vegetation: proportion of herbs (including <i>Carex</i> spp.)	Maintain the proportion of herbaceous species within the range 40%-90%	A high cover of characteristic herbs, including sedges (<i>Carex</i> species) is typical of the structure of this habitat type.	
Structure and function (including its typical species)	Key structural, influential and/or distinctive species	<p>Maintain the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat:</p> <p>The constant and preferential plants of the CG2, CG3 and CG6 NVC community types which form a key component of the</p>	<p>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;</p> <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'). 	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p>H6210 feature.</p> <p>Chalk heath species including: Heather <i>Calluna Vulgaris</i> Gorse <i>Ulex spp.</i></p> <p><i>Cladonia convoluta</i></p> <p>The assemblage of notable vascular plants including: Man Orchid <i>Orchis anthropophora</i> Chalk Eyebright <i>Euphrasia pseudokernerii</i> Musk Orchid <i>Herminium monorchis</i> Frog Orchid <i>Coeloglossum viride</i></p> <p>Southern hepatic mat bryophyte assemblage.</p> <p>Invertebrate assemblage.</p>	<p>• 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, predators or other species with a significant functional role linked to the habitat)</p> <p>• Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC.</p> <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>	
Structure and function (including its typical species)	Vegetation: undesirable species	Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread:	<p>There will be a range of undesirable or uncharacteristic species which, if allowed to colonise and spread, are likely to have an adverse effect on the feature's structure and function, including its more desirable typical species.</p> <p>These may include invasive non-natives such as Cotoneaster spp., or coarse and aggressive native species which may uncharacteristically dominate the composition of the feature.</p> <p>Undesirable species may include: Creeping thistle <i>Cirsium arvense</i>, spear thistle <i>Cirsium vulgare</i>, curled dock <i>Rumex crispus</i>, broad-leaved dock <i>Rumex obtusifolius</i>, common ragwort <i>Senecio jacobaea</i>, common nettle <i>Urtica dioica</i></p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>NATURAL ENGLAND, 2014. <i>Butser Hill SAC – Site Improvement Plan</i>. Available at: http://publications.naturalengland.org.uk/publication/4842655599034368</p>
Structure and function (including its typical species)	Vegetation community transitions	Maintain the pattern of natural vegetation zonations/transitions between woodland through scrub to grassland, maintaining the woodland 'edge' composed of hawthorn, blackthorn, buckthorn,	Transitions/zonations between adjacent but different vegetation communities are usually related to naturally-occurring changes in soil, aspect or slope. Such 'ecotones' retain characteristics of each bordering community and can add value in often containing species not found in the adjacent communities. Retaining such transitions can provide further diversity to the	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>crab apple and holly that forms the transition to grassland.</p> <p>Maintain the transitions between grassland types (CG2, CG3, and CG6).</p>	<p>habitat feature, and support additional flora and fauna.</p>	
Structure and function (including its typical species)	Soils, substrate and nutrient cycling	<p>Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.</p>	<p>Soil is the foundation of basic ecosystem function and 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.</p> <p>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 this Annex I feature.</p>	
Structure and function (including its typical species)	Supporting off-site habitat	<p>Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support the feature</p>	<p>The structure and function of the qualifying habitat, including its typical species, may rely upon the continued presence of areas which surround and are outside of the designated site boundary.</p> <p>Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species. This supporting habitat may be critical to the typical species of the feature to support their feeding, breeding, roosting, population dynamics ('metapopulations'), pollination or to prevent/reduce/absorb damaging impacts from adjacent land uses e.g. pesticide drift, nutrient enrichment.</p> <p>Additional areas of calcareous grassland and other species rich grasslands occur near to the SAC. These need to be maintained to support wider populations of the species that characterise the SAC and maintain the resilience of the habitat.</p>	
Structure and function (including its typical species)	Functional connectivity with wider landscape	<p>Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site</p>	<p>This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives. These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p>	
Structure and function (including its typical species)	Adaptation and resilience	Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site	<p>This recognises the increasing likelihood of natural 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.</p> <p>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.</p> <p>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 habitats and supporting habitats.</p> <p>This means that this site is considered to be vulnerable overall but is 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 monitoring would be advisable.</p>	<p>NATURAL ENGLAND. 2015. <i>Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England</i>. Available at: http://publications.naturalengland.org.uk/publication/4954594591375360</p>
Supporting processes (on which the	Air quality	Restore as necessary, the concentrations and deposition of air pollutants to at or below the	This habitat type 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	More information about site-relevant Critical Loads and Levels for this SAC is available by using

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
feature relies)		<p>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>	<p>damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it.</p> <p>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.</p> <p>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 set to Restore because the current levels of nitrogen deposition (APIS accessed on 31 January 2019) exceed the critical load for the H6210 feature.</p>	<p>the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk).</p> <p>NATURAL ENGLAND, 2014. <i>Butser Hill SAC – Site Improvement Plan</i>. Available at: http://publications.naturalengland.org.uk/publication/4842655599034368</p>
Supporting processes (on which the feature relies)	Conservation measures	<p>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.</p>	<p>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.</p> <p>In particular this feature requires management through grazing and control of scrub.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>NATURAL ENGLAND, 2014. <i>Butser Hill SAC – Site Improvement Plan</i>. Available at: http://publications.naturalengland.org.uk/publication/4842655599034368</p>
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: N/A				

Table 2: Supplementary Advice for Qualifying Features: H91J0. *Taxus baccata* woods of the British Isles; Yew-dominated woodland

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 on areas that have been historically occupied by yew woodland.	<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.</p> <p>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.</p> <p>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. 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.</p> <p>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 parts of the woodland, especially those with limited powers of dispersal.</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)
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.</p> <p>This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction.</p> <p>These fragments also 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 some of the typical and more specialist species associated with the Annex I habitat feature.</p>	This attribute will be periodically monitored as part of Natural England's site condition assessments .
Structure and function (including its typical species)	Vegetation community composition	<p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type:</p> <p>W13 <i>Taxus baccata</i> woodland</p>	<p>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 vegetation management.</p> <p>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. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>Typically, the understory is absent in the areas dominated by Yew <i>Taxus baccata</i>. Where one is present, it is composed of bryophytes, bramble <i>Rubus</i> spp. and wild strawberry <i>Fragaria vesca</i>.</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)
Structure and function (including its typical species)	Vegetation structure - canopy cover	Maintain an appropriate tree canopy cover across the feature, which will typically be between 40-90% of the site.	<p>Canopy cover is the overall proportion of vegetative cover consisting of any woody layer ranging from established regeneration to mature and veteran stages. Woodland canopy density and structure is important because it affects ecosystem function and in particular microclimate, litterfall, soil moisture, nutrient turnover and shading; this in turn influences the composition of plants and animals in lower vegetation layers and soil.</p> <p>Open canopies with just scattered trees will have less of a woodland character and reduced diversity of woodland-dependent species (although they may be still be important as a form of woodland-pasture). Completely closed canopies across the whole woodland are not ideal either however, as they cast heavier shade and support fewer species associated with edges, glades and open grown trees, and have little space where tree regeneration could occur.</p> <p>In general, the woodland canopy of this feature should provide a core of woodland interior conditions with some open and edge habitat as well.</p>	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 approximately 10% of area	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation structure - old growth	Maintain the extent and continuity of undisturbed, mature/old growth stands and the assemblages of veteran and ancient trees.	<p>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.</p> <p>The targets set within this attribute should reflect most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context.</p> <p>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.</p>	
Structure and function (including its typical species)	Vegetation structure - dead wood	Maintain the continuity and abundance of standing or fallen dead and decaying wood	<p>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.</p> <p>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.</p> <p>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.</p>	
Structure and function (including its typical species)	Vegetation structure - age class distribution	Maintain the natural diversity of age classes (e.g. pole stage, mature, veteran) spread across the average life expectancy of the trees - which can be hundreds of years.	A distribution of size and age classes of the major site-native tree and shrub species that indicate the woodland will continue in perpetuity, and will provide a variety of the woodland habitats and niches expected for this type of woodland at the site in question.	
Structure and function (including its typical species)	Vegetation structure - shrub layer	Maintain the understorey of shrubs under the yew canopy, with occasionally present species such as holly, hawthorn, elder, box) (this may vary with light levels)	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.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation structure - Woodland edge (graduated edge; buffered; mosaics with other habitats)	Maintain a graduated woodland edge into adjacent semi-natural open habitats, other woodland/wood-pasture types or scrub.	<p>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.</p> <p>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.</p> <p>Many typical forest species make regular use of the edge habitats for feeding due to higher herb layer productivity and larger invertebrate populations.</p> <p>Some of the woodland margins have an 'edge' structure with bushes such as hawthorn <i>Crataegus monogyna</i>, blackthorn <i>Prunus spinosa</i> and buckthorn <i>Rhamnus cathartica</i> forming a transition to grassland.</p>	This attribute will be periodically monitored as part of Natural England's site condition assessments .
Structure and function (including its typical species)	Adaptation and resilience	Maintain the resilience of the feature by ensuring a diversity of site-native tree species; although yew dominates, this can be provided by a scattering of species such as whitebeam, ash, beech, sycamore and oak.	<p>This recognises the increasing likelihood of natural habitat features needing 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.</p> <p>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.</p> <p>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 habitats.</p>	NATURAL ENGLAND. 2015. <i>Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England</i> . Available at: http://publications.naturalengland.org.uk/publication/4954594591375360

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>This means that this site is considered to be vulnerable overall but is 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 monitoring would be advisable.</p>	
Structure and function (including its typical species)	Regeneration potential	<p>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.</p>	<p>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.</p> <p>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.</p> <p>There are signs of deer browsing on seedlings of broad-leaved species rather than Yew. However, deer numbers should be monitored and control measures in place if necessary.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments.</p> <p>NATURAL ENGLAND, 2014. <i>Butser Hill SAC – Site Improvement Plan</i>. Available at: http://publications.naturalengland.org.uk/publication/4842655599034368</p>
Structure and function (including its typical species)	Tree and shrub species composition	<p>Maintain a canopy and under-storey of which 95% is composed of site native trees and shrubs including <i>Taxus baccata</i> yew, <i>Fagus sylvatica</i> beech, <i>Fraxinus excelsior</i> ash, <i>Corylus avellana</i> hazel, <i>Ilex aquifolium</i> holly, <i>Ulmus spp.</i> elm, <i>Acer campestre</i> field maple and <i>Crataegus monogyna</i> hawthorn.</p>	<p>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.</p> <p>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).</p> <p>The woodland structure is typical of the woodland type with mainly even-aged yew <i>Taxus baccata</i> dominating the canopy although ash <i>Fraxinus excelsior</i> and whitebeam <i>Sorbus aria</i> agg. are prominent components.</p>	
Structure and function (including its typical)	Key structural, influential and/or	<p>Maintain the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1</p>	<p>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:</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
species)	distinctive species	<p>habitat:</p> <p>Yew <i>Taxus baccata</i></p> <p>The constant and preferential plant species associated with the W13 NVC community.</p>	<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, predators or other species with a significant functional role linked to the habitat). • 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>	
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	<p>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.</p> <p>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.</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)
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 within typical values for the habitat.	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 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.	
Supporting processes (on which the feature relies)	Functional connectivity with wider landscape	Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site	<p>This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives. These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are either important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site.</p> <p>These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p>	
Supporting processes (on which the feature relies)	Air quality	Restore the 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>This habitat type 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 and causing the loss of sensitive typical species associated with it.</p> <p>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</p>	<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).</p> <p>NATURAL ENGLAND, 2014. <i>Butser Hill SAC – Site Improvement Plan</i>. Available at: http://publications.naturalengland.org.uk/publication/4842655599034368</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>or Dusts.</p> <p>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 set to Restore because the current levels of nitrogen and acid deposition (APIS accessed on 31 January 2019) exceed the critical loads for the H91J0 feature.</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.</p> <p>This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. This attribute and target are included because 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>	
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.	<p>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.</p> <p>Flowering and development of trees and plants can also be modified by un-natural illumination which can disrupt natural</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>seasonal responses.</p> <p>Light levels are currently not thought to be a concern on this site for the habitat feature. Therefore, there has not currently been any investigation on light levels on this site.</p>	
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: N/A				