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

East Hampshire Hangers Special Area of Conservation (SAC)
Site Code: UK0012723

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to East Hampshire Hangers 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	East Hampshire Hangers 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	01 April 2005
Qualifying Features	See section below
Designation Area	569.68 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)	Coombe Wood and The Lythe SSSI, Noar Hill SSSI, Selborne Common SSSI, Upper Greensand Hangers: Empshott to Hawkley SSSI, Upper Greensand Hangers: Wyck to Wheatley SSSI, Wealden Edge Hangers SSSI, Wick Wood and Wordham Hangers SSSI
Relationship with other European or International Site designations	None

Site background and geography

This site supports beech *Fagus sylvatica* woodlands which are extremely rich in vascular plants, including white helleborine *Cephalanthera damasonium*, violet helleborine *Epipactis purpurata,* green-flowered helleborine *E. phyllanthes* and Italian lords-and-ladies *Arum italicum*. The woods include areas with old pollards on former wood-pasture as well as high forest. There are transitions to mixed woodland including areas of small-leaved lime *Tilia cordata* on the steepest parts of the Upper Greensand scarp. The bryophyte flora is rich and includes several species that are rare in the lowlands. The Wealden Edge Hangers component of the site contains stands of yew *Taxus baccata* woodland.

"Chalk grassland has developed in ancient quarries at Noar Hill and includes local species such as early gentian *Gentianella anglica* and an outstanding assemblage of orchids, including one of the largest UK populations of musk orchid *Herminium monorchis*. Calcareous grassland is also present at Selbourne Common and in the Wealden Edge Hangers".

East Hampshire Hangers SAC is part of the National Character Area Profile: 130. Hampshire Downs (NE549).

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*) (important orchid sites); Dry grasslands and scrublands on chalk or limestone, including important orchid sites)**

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, extending locally into upland areas in northern England, Scotland and Northern Ireland. 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*, pasqueflower *Pulsatilla vulgaris*, bastard-toadflax *Thesium humifusum* and the Annex II species S1654 early gentian *Gentianella anglica*, as well as various bryophytes and lichens. The invertebrate fauna is also noteworthy, and includes rarities such as the adonis blue *Lysandra bellargus* and silver-spotted skipper *Hesperia comma*.

This Annex I category 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.

Orchid Rich Sites (Priority Habitat Type)

This priority habitat type comprises *Festuco-Brometalia* calcareous grasslands containing important orchid assemblages and/or rare orchids. 'Important orchid sites' are defined in the *Interpretation Manual of European Union Habitats* as localities which meet one or more of the following criteria:

1. the site hosts a rich suite of orchid species;
2. the site hosts an important population of at least one orchid species considered not very common on the national territory;
3. the site hosts one or several orchid species considered to be rare, very rare or exceptional on the national territory.

Priority status is afforded only to sites which meet these criteria. It is not appropriate to identify other features that make them distinctive.

H6210. Semi-natural dry grasslands and scrubland facies is a qualifying feature for this site but is not the primary reason for East Hampshire Hangers SAC's designation.

- ***H9130. Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)**

This Annex I type occurs on circumneutral to calcareous soils. In the UK it mostly corresponds to NVC type W12 *Fagus sylvatica – Mercurialis perennis* woodland, but more calcareous stands of NVC type W14 *Fagus sylvatica – Rubus fruticosus* woodland may also conform to this habitat type. The two NVC types often occur together on a site. Each community has a different associated suite of species which change according to slope and soil type. As slopes become steeper, there is a shift from relatively deep, moist and moderately base-rich soils to thin, dry and strongly base-rich profiles. There is an associated floristic gradient in the woodland under-storey, with dense cover of bramble *Rubus fruticosus* on the shallowest slopes gradually being replaced by frequent dog's mercury *Mercurialis perennis* as the gradient increases, and then by sanicle *Sanicula europaea*, wall lettuce *Mycelis muralis* and wood melick *Melica uniflora*.

UK stands of *Asperulo-Fagetum* beech forest belong to the central and northern European associations of the habitat, typically lacking some of the more Continental species such as liverleaf *Hepatica nobilis*, baneberry *Actaea spicata* and asarabacca *Asarum europaeum*, but with correspondingly more Atlantic species, including holly *Ilex aquifolium* and bluebell *Hyacinthoides non-scripta*.

While many sites have a core of ancient woodland, planting of beech *Fagus sylvatica* and its natural spread on to adjacent grassland under reduced grazing pressures have led in places to an expansion of this habitat over the 20th century. Sites therefore often have a complicated history. The beech dominance in particular has often been emphasized by past silvicultural treatment.

East Hampshire Hangers represents *Asperulo-Fagetum* beech forests in south-east England. The site is extremely rich in terms of vascular plants, including white helleborine *Cephalanthera damasonium*, violet helleborine *Epipactis purpurata*, green-flowered helleborine *E. phyllanthes* and Italian lords-and-ladies *Arum italicum*. The woods include areas with old pollards on former wood-pasture as well as high forest. There are also transitions to H9180 *Tilio-Acerion* forests of slopes, screes and ravines.

- ***H9180. Tilio-Acerion* forests of slopes, screes and ravines. (Mixed woodland on base-rich soils associated with rocky slopes)**

Tilio-Acerion ravine forests are woods of ash *Fraxinus excelsior*, wych elm *Ulmus glabra* and lime (mainly small-leaved lime *Tilia cordata* but more rarely large-leaved lime *T. platyphyllos*). Introduced sycamore *Acer pseudoplatanus* is often present and is a common part of the community in mainland Europe, where it is native. The habitat type typically occurs on nutrient-rich soils that often accumulate in the shady micro-climates towards the bases of slopes and ravines. Therefore it is found on calcareous substrates associated with coarse scree, cliffs, steep rocky slopes and ravines, where inaccessibility has reduced human impact. It often occurs as a series of scattered patches grading into other types of woodland on level valley floors and on slopes above, or as narrow strips along stream-sides. More extensive stands occur on limestone and other base-rich rocks.

This habitat type is ecologically variable, particularly with respect to the dominant tree species. To the north and west, ash and wych elm assume increasing importance in the canopy, and lime may be completely absent. Floristic differences due to variations in slope, aspect and nature of the substrate add to the diversity of the habitat. The ground flora can be very varied, but the following elements are usually present: fern banks (particularly hart's-tongue *Phyllitis scolopendrium*, soft shield-fern *Polystichum setiferum* and buckler-ferns *Dryopteris* spp.); stands of ramsons *Allium ursinum* in the moister zones; dog's mercury *Mercurialis perennis* and enchanter's-nightshade *Circaea* spp. on drier but still base-rich soils; wood avens *Geum urbanum*, and natural 'disturbance communities' comprising common nettle *Urtica dioica*, herb-Robert *Geranium robertianum* and cleavers *Galium aparine* associated with scree and cliff-bases. A wide range of other basiphilous herbs and grasses may occur within these stands.

East Hampshire Hangers, with Rook Clift, represents an unusual occurrence of *Tilio-Acerion* forests in the south of England. It has areas of small-leaved lime *Tilia cordata* on the steepest parts of the Upper Greensand scarp, associated with low sandstone cliffs and scree slopes, which are locally calcareous. The bryophyte flora is richer than on the chalk examples and includes several species that are rare in the lowlands, such as campylostelium moss *Campylostelium saxicola*, which has its strongest population in England here. The site is ecologically similar to sites selected in the Welsh Borders, despite its geographic location.

- ***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.

H91J0. *Taxus baccata* woods is a qualifying feature for this site but is not the primary reason for East Hampshire Hangers SAC's designation.

Qualifying Species:

- **S1654. Early gentian *Gentianella anglica***

Early gentian *Gentianella anglica* is an annual plant, occurring in calcareous grassland, mainly on steep, south-facing slopes. It grows on bare ground or in thin turf that is kept open by a combination of rabbit or sheep-grazing and trampling by livestock on thin droughted soils. In dense turf it becomes shaded out and unable to compete with other more vigorous species. It is found on a variety of substrates and in different habitats, but is particularly frequent in coastal grasslands. At most of its localities the vegetation is referable to S6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*).

S1654. Early gentian *Gentianella anglica* is a qualifying species for this site but is not the primary reason for East Hampshire Hangers SAC's designation.

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

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 calcareous substrates capable of supporting the feature (excluding calcareous substrates supporting long established woodland).	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 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. H6210. Semi-natural dry grasslands and scrubland facies is found within three of the underpinning SSSIs – Noar Hill SSSI, Selbourne Common SSSI and Wealden Edge Hangers SSSI.	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (Various) Definitions of Favourable Condition for component SSSIs underpinning East Hampshire Hangers SAC. Available on request from Natural England.
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	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. 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 the amount of light,	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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**	Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types CG2 *Festuca ovina-Avenula pratensis* grassland Dry tall herb grasslands not referable to established NVC communities, including areas that are transitional between grassland and scrub. Juniper scrub and species rich calcareous scrub, including examples referable to: W21 common hawthorn – common ivy *Crataegus monogyna-Hedera helix* scrub and W22 blackthorn-blackberry *Prunus spinosa-Rubus fruticosus* scrub	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. 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).	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (Various) Definitions of Favourable Condition for component SSSIs underpinning East Hampshire Hangers SAC. Available on request from Natural England.
Structure and function (including its typical species)	**Vegetation: proportion of herbs (including Carex spp)**	Maintain the proportion of herbaceous species within the range 40%-90%	A high cover of characteristic herbs, including sedges (Carex species) is typical of the structure of this habitat type.	
Structure and function (including its	**Key structural, influential**	Maintain the abundance of the typical species listed below to enable each of them to be a	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	Tony Mundell and Sue Clark, 2007 Noar Hill Plant Survey

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
typical species)	**and/or distinctive species**	viable component of the Annex 1 habitat; Species Critical to the Important Orchid Sites Priority Feature: Musk orchid *Herminium monorchis* The constant and preferential plant species associated with the vegetation communities listed above. Important species that are distinctive of the Annex I habitat feature within this SAC: Brown Hairstreak *Thecla betulae* Duke of Burgundy *Hamearis lucina* Fairy Shrimp *Chirocephalus diaphanous* Juniper *Juniperis communis* Early Gentian *Gentianella anglica* (see separate table for this species) Assemblage of notable vascular plants not already mentioned above including: Chalk Eyebright, *Euphrasia pseudokerneri*, Frog Orchid, *Coeloglossum viride*, Fly Orchid, *Ophrys insectifera*	habitat feature at a particular site. These species will include; • **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. 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.	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (Various) Definitions of Favourable Condition for component SSSIs underpinning East Hampshire Hangers SAC. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	**Vegetation: undesirable species**	Restore 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. Undesirable species . All non-native species Trees and scrub (excluding Juniper)	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. 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. Varying levels of tree and scrub cover are acceptable in different parts of the SAC. Some areas of species rich scrub can also be important to maintain within a certain limit. Contact Natural England for more site specific advice. Undesirable species may include: Cow parsley *Anthriscus sylvestris,* common daisy *Bellis perennis,* creeping thistle *Cirsium arvense,* spear thistle *Cirsium vulgare,* plumeless thistles *Carduus* spp*.,* rosebay willowherb *Chamerion angustifolium,* cleavers *Galium aparine,* common plantain *Plantago major,* curly dock *Rumex crispus,* broad-leaved dock *Rumex obtusifolius,* common ragwort *Senecio jacobaea, Sonchus* spp*.,* common nettle *Urtica dioica*	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (Various) Definitions of Favourable Condition for component SSSIs underpinning East Hampshire Hangers SAC. Available on request from Natural England.
Structure and function (including its typical species)	**Vegetation community transitions**	Maintain the pattern of natural vegetation zonations/transitions	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 habitat feature, and support additional flora and fauna. Transitions between grassland and scrub are of importance provided the quantity of scrub is kept within acceptable levels.	
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 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	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			ecological structure, function and processes associated with this Annex I feature.	
Structure and function (including its typical species)	**Supporting off-site habitat**	Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support the feature	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. 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. Additional areas of calcareous grassland and calcareous scrub occur nearby outside of the SAC boundary and areas of other types of species rich grassland occur within the SAC. It is important that these are maintained to support the wider populations of the species that characterise the SAC feature.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	**Functional connectivity with wider landscape**	Restore the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site	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. 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.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
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	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. 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. 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. 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 monitoring would be advisable.	Natural England, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at http://publications.naturalengland.org.uk/publication/4954594591375360].
Supporting processes (on which the feature relies)	**Air quality**	Restore as necessary, 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).	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. 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	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).

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			scientific understanding. There are critical levels for ammonia (NH3), oxides of nitrogen (NOx) 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.	
Supporting processes (on which the feature 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 processes associated with the feature	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. Parts of the feature need to be restored from excessive cover of scrubby and undesirable species.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Version Control: N/A				
Variations from national feature-framework of integrity-guidance: N/A				

Table 2: Supplementary Advice for Qualifying Features: H9130. Asperulo-Fagetum beech forests; Beech forests on neutral to rich soils
H9180. *Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes *
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 suitable base rich substrates in areas where the relevant woodland types have historically been present	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. 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. 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 parts of the woodland, especially those with limited powers of dispersal.	Jonathan Cox, 1997. East Hampshire hangers NVC survey This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (Various) Definitions of Favourable Condition for component SSSIs underpinning East Hampshire Hangers SAC. Available on request from Natural England.

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	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. 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 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. H9130. *Asperulo-Fagetum* beech forests is found within all the underpinning SSSIs except Upper Greensand Hangers: Wyck to Wheatley SSSI. H9180. *Tilio-Acerion* forests of slopes, screes and ravines is found within all of the underpinning SSSIs except Selbourne Common. H91J0. *Taxus baccata* woods of the British Isles is only found within Noar Hill SSSI and Wealden Edge Hangers SSSI.	Jonathan Cox, 1997. East Hampshire hangers NVC survey 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**	Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type (s) W8 European ash-field maple-dog's mercury *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland	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. 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 attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (Various) Definitions of Favourable Condition for component SSSIs underpinning East Hampshire Hangers SAC. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		W12 European beech-dog's mercury *Fagus sylvatic-Mercurialis perennis* woodland W13 yew *Taxus baccata* woodland		
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	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. 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. In general, the woodland canopy of this feature should provide a core of woodland interior conditions with some open and edge habitat as well.	
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	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	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)
			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.	
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.	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 habitat type, old or over-mature elements of the woodland are particularly characteristic and important features, and their continuity should be a priority.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its typical species)	**Vegetation structure - dead wood**	Maintain the continuity and abundance of standing or fallen dead and decaying wood,	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	**Vegetation structure - shrub layer**	H9130. *Asperulo-Fagetum* beech forests. and H91J0. *Taxus baccata* yew	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	This attribute will be periodically monitored as part of Natural England's site condition

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
typical species)		woods of the British Isles: Maintain an understorey of shrubs covering at least 5% of the stand area H9180. *Tilio-Acerion* forests of slopes, screes and ravines: Maintain an understorey of shrubs covering 20-60% of the stand area.	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.	assessments Natural England (Various)
Structure and function (including its typical species)	**Vegetation structure - age class distribution**	Maintain a natural diversity of tree ages including at least 3 age classes (pole stage/ medium/ mature) spread across the average life expectancy of the commonest trees.	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 - 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.	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)	**Vegetation structure - adaptation and resilience**	Maintain the full diversity of site-native trees within each annex 1 woodland habitat across the site.	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)	**Supporting off-site habitat**	Restore the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support the feature	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. Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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. The full area of woodland within and adjacent to the SAC including those areas that do not conform to the designated annex 1 types need to be maintained in order to maintain the diversity and resilience of the SAC features. Areas of conifer plantation within and adjacent to the SAC consequently should be restored to native woodland.	
Structure and function (including its typical species)	**Browsing and grazing by herbivores**	Maintain browsing/grazing by deer and livestock to sufficiently low levels to allow tree seedlings and saplings the opportunity to exceed browse height, and which maintain the characteristic structure of the woodland feature e.g. a well-developed understorey with no obvious browse line, & lush ground vegetation with some grazing sensitive species evident (bramble, ivy etc.), and tree seedlings and sapling common in gaps.	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, bark stripping and a heavily grazed sward.	
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	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	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)
		sufficient numbers in gaps, at the wood edge and/or as regrowth as appropriate ;	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.	
Structure and function (including its typical species)	**Tree and shrub species composition**	Maintain a canopy and under-storey of which 95% is composed of site native trees and shrubs	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
Structure and function (including its typical species)	**Key structural, influential and/or distinctive species**	Maintain the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat Tree species critical to the Annex 1 habitat types: Beech *Fagus sylvatica* Yew *Taxus baccata* The Constant and preferential plant species for the W8, W12 and W13 NVC types. Important species distinctive of Annex 1 habitats on this SAC Small-leaved lime *Tilia cordata* Bent Moss *Campylostelium saxicola* Curve-stalked Feather-moss *Rhynchostegiella curviseta*	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; • **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. 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	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		Brown Hairstreak *Thecla betulae* The assemblage of notable vascular plants within the SAC including: White helleborine *Cephalanthera damasonium*, Violet helleborine *Epipactis purpurata*, Green-flowered helleborine *Epipactis purpurata*, Narrow-leaved helleborine *Cephalanthera longifolia*, Red Helleborine *Cephalanthera rubra*, Birds nest *Neottia nidus-avis*, Yellow bird's-nest *Monotropa hypopitys*, Fly Orchid *Ophrys insectifera,* Lesser Butterfly-orchid *Platanthera bifolia* and Italian Lords and Ladies *Arum italicum ssp. Neglectum* The assemblage of notable Lichens including: *Varicellaria hemisphaerica* and Eagle's claws *Anaptychia ciliaris subsp. ciliaris*	about this site becomes 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.	
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	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	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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.	
Supporting processes (on which the feature relies)	**Air quality**	Restore as necessary, 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).	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. 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 (NOx) 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.	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 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	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	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		this site.	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.	
Version Control				
Variations from national feature-framework of integrity-guidance: Attributes for all three woodland features have been merged together into one table because most of the attributes for them are the same and they often occur together on the same sites. Attributes for adaptation and resilience, old growth, and dead wood have been amended as the standard targets were too specific and not necessarily appropriate to the site.				

Table 3: Supplementary Advice for Qualifying Features: S1654. *Gentianella anglica*; Early gentian

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	**Population abundance**	Maintain the abundance of the population whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	Populations may fluctuate considerably from year to year, depending on habitat condition, weather, etc. Flowering performance may also vary between years, affecting the plant's visibility. 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. 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.	Tony Mundell and Sue Clark, 2007 Noar Hill Plant Survey This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (2009) Definitions of Favourable Condition – Noar Hill SSS. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	**Population abundance**	Maintain the abundance of the population at a level which is above, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	Some populations may be too large/extensive, or too widely dispersed, to be easily counted. In such cases, broken log scale estimates of each sub-population or sub-site may be sufficient. 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. 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. 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 possible, local Natural England staff can advise that the figures	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			stated are the best available.	
Population (of the feature)	**Population structure: presence of *Gentianella amarella*, *Gentianella x davidii* and 'intermediates'**	Maintain the presence of both *G. anglica* and *G. amarella*, and (if discovered) the putative hybrid between the two species (*G. x davidii*)	Intermixed populations have been recorded from many sites, with the hybrid recorded especially from sites near edge of range of *G. anglica*. Phenological differences (flowering time) usually helpful in distinguishing between *G. anglica* and autumn gentian *G. amarella*. Note: there is still some uncertainty about the extent to which these two species hybridise, or indeed whether the two species are actually one. Autumn gentian is present at this site however hybrids were not recorded during the vascular plant survey by Tony Mundell. If the hybrid is found then its presence needs to be maintained.	Tony Mundell & and Sue Clark, 2007 Noar Hill Plant Survey
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.	Tony Mundell and Sue Clark, 2007 Noar Hill Plant Survey
Supporting habitat: extent and distribution	**Extent of supporting habitat**	Maintain the total extent of the habitat(s) which support the feature on suitable calcareous substrates located at or near current and previous known locations for this species:	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. S1654. *Gentianella anglica*; Early gentian is only found within Noar Hill SSSI. The required habitat is short grazed calcareous grassland.	Tony Mundell & Sue Clark, 2007 Noar Hill Plant Survey This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (2009) Definitions of Favourable Condition – Noar Hill SSS. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/ function	**Habitat structure and bare ground: regeneration/ colonisation niches**	Maintain patches of bare ground and an open-textured sward to provide creating suitable regeneration/colonisation niches. Bare ground should be in range c 5-10%	Patches of suitable vegetation often occur in mosaics with less suitable areas, and generally associated with steeper slopes, more southerly aspects, thinner soils, heavier grazing or trampling. All available evidence points to need for there being plenty of bare ground in a short/tightly grazed open-textured sward. Many sites best described as 'sparsely vegetated'). Some evidence suggests that early gentian *G. anglica* tends to occur in microsites recovering after disturbance (whereas autumn gentian *G. amarella* may also occur as a pioneer in recently disturbed sites).	
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.	
Supporting habitat: structure/ function	**Substrate**	Maintain a substrate of skeletal drought-prone relatively infertile soils overlying calcareous bedrock (chalk or limestone), with a generally SE, S or SW aspect.	See above for floristic indicators that may indicate changes in soil nutrient status (increase in fertility).	
Supporting habitat: structure/ function	**Vegetation composition: negative indicators**	Maintain the frequency/cover of the following undesirable species at or to acceptable levels and are not encouraged by changes in surface condition, soils, nutrient levels or changes to hydrology; Heath false-brome *Brachypodium pinnatum,* upright brome *Bromopsis erecta,* downy oat-grass *Avenula pubescens,* false oat-grass *Arrhenatherum*	This feature can be adversely affected by changes to the grass: herb ratio (increase in grasses), often in tandem with the sward becoming 'thicker' (less bare ground) or more rank. Cover of tall grasses, e.g. heath false-brome *Brachypodium pinnatum,* upright brome *Bromopsis erecta,* downy oat-grass *Avenula pubescens,* false oat-grass *Arrhenatherum elatius,* cocksfoot *Dactylis glomerata*, should typically not exceed about 10% (except the first two may locally occur at higher cover in stands of CG4a and CG3a respectively). Other species likely to be favoured by increased soil fertility/agricultural improvement, e.g. perennial ryegrass *Lolium*	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (2009) Definitions of Favourable Condition – Noar Hill SSS. Available on request from Natural England.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		elatius, cocksfoot *Dactylis glomerata,* cow parsley *Anthriscus sylvestris,* common daisy *Bellis perennis,* creeping thistle *Cirsium arvense,* spear thistle *Cirsium vulgare,* plumeless thistles *Carduus* spp.*,* rosebay willowherb *Chamerion angustifolium,* cleavers *Galium aparine,* common plantain *Plantago major,* curly dock *Rumex crispus,* broad-leaved dock *Rumex obtusifolius,* common ragwort *Senecio jacobaea, Sonchus* spp., common nettle *Urtica dioica*. All non-native species Trees and scrub (excluding Juniper) Trees and scrub: All non-native species.	*perenne,* Yorkshire fog *Holcus lanatus,* crested dog's-tail *Cynosurus cristatus,* yellow oat-grass *Trisetum flavescens,* white clover *Trifolium repens*, should be rare or absent. Equally, 'agricultural weeds' such as creeping thistle *Cirsium arvense,* spear thistle *Cirsium vulgare,* cleavers *Galium aparine,* common plantain *Plantago major,* broad-leaved dock *Rumex obtusifolius,* common ragwort *Senecio jacobaea* and common nettle *Urtica dioica*, are likely to be indicators of bad management and loss/degradation of suitable habitat, so should be rare or absent.	
Supporting habitat: structure/ function	**Vegetation height**	Maintain a sward typically in the range of 2-5cm, but this species may also occur in slightly taller swards (5-20cm) as long as these still have plenty of bare ground and an absence of 'grassy' dominants.	Swards usually require moderate to heavy grazing and/or trampling to keep them sufficiently short and open; but on some coastal sites, drought and exposure may be sufficient on their own to maintain suitable sward conditions. Grazing may be by rabbits, deer, sheep or cattle. Generally, rabbits and/or sheep preferred to cattle (see, e.g. Telfer 1994), although Wilson (2000) suggests for sites in Wilts that summer (April-October) cattle grazing at 1.5 animals/ha, plus less intensive grazing in the winter, is suitable for many sites, with sheep used in late summer to remove any excess grass growth. Sward height may vary from year to year, depending not only on stocking rates and timing but also on the weather.	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (2009) Definitions of Favourable Condition – Noar Hill SSS. Available on request from Natural England. Telfer. S. 1994: A survey of early gentian (*Gentianella anglica*) the Isle of Wight Wilson, P.J. 2000: Early gentian,

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				Gentianella anglica (Pugsley) E. Warb. Survey and monitoring work in 1999
Supporting habitat: structure/ function	**Vegetation structure and composition**	Maintain the area of suitable supporting habitat which should ideally consist of short (2-5 cm), tightly-grazed and trampled calcicolous grassland with typically 5-10% bare ground which corresponds to the following NVC communities: CG2	Vegetation composition of this feature can be variable, depending on habitat, aspect, management regime and underlying geology/soils, but the frequent presence of the following species tend to be positive indicators of suitable Early Gentian habitat in its usual CG2 NVC community include: salad burnet *Poterium sanguisorba,* dwarf thistle *Cirsium acaule,* wild thyme *Thymus praecox,* common milkwort *Polygala vulgaris,* blue sedge *Carex flacca,* horseshoe vetch *Hippocrepis comosa,* yellow wort *Blackstonia perfoliata,* fairy flax *Linum catharticum,* rough hawkbit *Leontodon hispidus,* mouse-ear hawkweed *Pilosella officinarum,* bulbous buttercup *Ranunculus bulbosus.* Grasses such as meadow oat-grass *Avenula pratensis,* downy oat-grass *A. pubescens,* heath false brome *Brachypodium pinnatum,* false-brome *B. sylvaticum* and upright brome *Bromopsis erecta* may be frequent as an open grassy 'overstorey', but never abundant or dominant. Early gentian may often occur with autumn gentian. *Gentianella amarella*, but the two species usually occupy different microsites and seasonal timings, although there may be considerable overlap on some sites.	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (2009) Definitions of Favourable Condition – Noar Hill SSS. Available on request from Natural England.
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	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	Natural England, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at http://publications.naturalengland.org.uk/publication/4954594591375360].

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			feature's long-term viability. The exact vulnerability of this species is currently undefined. However, 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. 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 monitoring would be advisable.	
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).	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 (NOx) 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.	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).

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)	**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.	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England (2009) Definitions of Favourable Condition – Noar Hill SSS. Available on request from Natural England.
Supporting processes (on which the feature and/or its supporting habitat relies)	**Grazing pressure**	Maintain a grazing regime to keep the sward short (preferably 2-5cm)	Swards usually require moderate to heavy grazing and/or trampling to keep them sufficiently short and open; but on some coastal sites, drought and exposure may be sufficient on their own to maintain suitable sward conditions. Grazing may be by (any combination of) rabbits, deer, sheep or cattle. Generally, rabbits and/or sheep preferred to cattle (see, e.g. Telfer 1994), although Wilson (2000) suggests for sites in Wilts that summer (April-October) cattle grazing at 1.5 animals/ha, plus less intensive grazing in the winter, is suitable for many sites, with sheep used in late summer to remove any excess grass growth.	Telfer. S. 1994: A survey of early gentian (*Gentianella anglica*) the Isle of Wight Wilson, P.J. 2000: Early gentian, *Gentianella anglica* (Pugsley) E. Warb. Survey and monitoring work in 1999
Version Control: N/A				
Variations from national feature-framework of integrity-guidance: Attribute for **Water Quality** has been removed as it is considered not relevant to this feature within the SAC.				