



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

**Ox Close Special Area of Conservation (SAC)
Site Code: UK0030234**



West Groves © Natural England 2012

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Ox Close 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	Ox Close Special Area of Conservation (SAC)
Location	North Yorkshire
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	141.25 ha
Designation Changes	None
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)	Ox Close SSSI The SSSI and SAC share the same boundary
Relationship with other European or International Site designations	The North Pennine Moors SAC and North Pennine Moors SPA abut the north-east flank of Ox Close SAC.

Site background and geography

Ox Close and the streams which drain it, particularly the Eller Beck, comprise a site outstanding for its assemblage of plants indicative of metal-rich soils (metallophytes). It is unusual in that it encompasses the three main situations in which metallophytes occur in the UK, including near-natural forms on cliffs and scars, old spoil-heaps from past lead-mining, and metal-enriched river alluvium associated with the Eller Beck. The plant species concerned are thrift *Armeria maritima*, moonwort *Botrychium lunaria*, Pyrenean scurvygrass *Cochlearia pyrenaica*, spring sandwort *Minuartia verna* (known locally as leadwort) and alpine penny-cress *Thlaspi caerulescens*. All these species are able to tolerate the high levels of lead and zinc in the soil, and thus are characteristic of such 'metalliferous' plant communities. Ox Close supports a rich metallophyte flora with significant populations of five species of higher plant metallophytes.

The broad-leaved woodland on Haw Bank contains old/former hazel coppice *Corylus avellana* and one or more specimens of small-leaved lime *Tilia cordata* and large-leaved lime *T. platyphyllos* all of which are rare in the Dales. Lime-rich flushes adjacent to the Eller Beck support a large population of grass of Parnassus *Parnassia palustris*, together with lesser clubmoss *Selaginella selaginoides* and at least one flat-sedge *Blysmus compressus*, and in drier areas there is herb-rich limestone grassland with for example common rock-rose *Helianthemum nummularium* and wild thyme *Thymus praecox*.

There is speculation around early Iron Age or Romano-British use of the site but following the scale of later use little evidence remains. There is no doubt that the site was being mined by 1500 initially to mixed commercial success. Then followed 3 centuries of on off mining at the site, each reworking removing most of the evidence of previous activity. Lead mining at the site ceased in 1888 by which time most commercial lead mining in Britain collapsed with the availability of cheaper imports and a crash in

commodity prices meaning that with the high pumping costs to stop shafts flooding the activity was no longer commercially viable. As elsewhere where there were large tips and bi-products to be had easily it is likely some of the spoil was reworked for barytes for the steel industry during the early or mid-20th Century.

Ox Close SAC is in the Yorkshire Dales National Character Area ([NCA 21](#)).

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:

- **H6130. Calaminarian grasslands of the *Violetalia calaminariae*; Grasslands on soils rich in heavy metals**

Calaminarian grasslands occur on soils that have levels of heavy metals, such as lead, zinc, chromium and copper, which are toxic to most plant species. The greatest extent of the habitat occurs on artificial sites associated with past mining activities. Near-natural examples are much more localised. There are three main situations where this habitat type has developed:

1. Near-natural, open vegetation of serpentine rock and mineral vein outcrops with skeletal soils;
2. Stable river gravels rich in lead and zinc and that are near-natural, although the heavy metal content may be partly an artefact of past mining activity in the river catchment;
3. Artificial mine workings and spoil heaps, mainly on limestone; these are numerous (several thousand UK localities) and extensive, although few sites have a high species-richness.

Grasslands of this type are referable to the *Thlaspiion-Calaminariae* alliance. The vegetation is typically species-poor but contains a number of species principally found in this habitat, most notably spring sandwort *Minuartia verna* and alpine penny-cress *Thlaspi caerulescens*. There is a genetically-adapted range of other species, such as sheep's fescue *Festuca ovina*, bladder campion *Silene vulgaris*, sea campion *Silene uniflora* and thrift *Armeria maritima*. Heavy metal toxicity of the soils, perhaps combined with a low nutrient status, is believed to maintain the open vegetation, retarding succession. The rarer species are favoured by lack of competition from more vigorous colonists. The Annex I type also includes assemblages of metal-tolerant lower plants on mine waste, even if higher plant metallophytes are lacking.

Ox Close is a large site representing Calaminarian grassland in the central Pennines. The site is unusual in that it encompasses the three main situations in which this habitat occurs in the UK, including near-natural forms on cliffs and scars, old spoil-heaps from past lead-mining, and metal-enriched river alluvium. This site supports a rich metallophyte flora with substantial populations of five species of higher plant metallophytes: thrift *Armeria maritima*, moonwort *Botrychium lunaria*, Pyrenean scurvygrass *Cochlearia pyrenaica*, spring sandwort *Minuartia verna* and alpine penny-cress *Thlaspi caerulescens*. The site shows the full succession from open sparsely-vegetated spoil to closed turf. Transitions from Calaminarian grassland to H6210 semi-natural dry grassland and flushes also occur.

- **H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone**

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*. However none of these occur in the upland fringe setting at Ox Close.

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. The main sub-types of these grasslands in the UK correspond to the following NVC types:

CG2 *Festuca ovina* – *Avenula pratensis* grassland
CG9 *Sesleria albicans* – *Galium sternerii* grassland

CG2 *Festuca* – *Avenula* grassland is widely distributed in grazed calcareous pastures throughout the lowlands of England and Wales. Typical *Mesobromion* calcicoles, such as meadow oat-grass *Avenula pratensis*, quaking-grass *Briza media*, common rock-rose *Helianthemum nummularium*, salad burnet *Sanguisorba minor* ssp. *minor* and small scabious *Scabiosa columbaria*, are well-represented, and are usually accompanied by species with a more Continental distribution, including dwarf thistle *Cirsium acaule* and squinancywort *Asperula cynanchica*. Many of the best-known 'chalk grassland' rarities occur in this type of *Festuco-Brometalia*, and some examples are strikingly species-rich.

On the limestones of northern England, grasslands dominated by *Sesleria albicans* are locally abundant. CG9 *Sesleria* – *Galium* grassland is fairly widespread, and occurs at moderate-high altitudes on Carboniferous Limestone in the Pennines and Lake District. The sub-montane character of the vegetation is shown by the reduced frequency of *Mesobromion* species, and the presence of limestone bedstraw *Galium sternerii* and other northern/upland species; some stands are enriched with arctic-alpine rarities. Similar *Sesleria*-dominated grasslands are also found in Northern Ireland.

Various sub-types of *Festuco-Brometalia* grassland frequently occur in close association, their distribution being determined by slope, aspect, grazing intensity and recreational pressure. Transitions between calcareous grasslands and heath, acid grassland, scrub and woodland communities are also widespread.

- **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.

The main NVC types found on site are:

W8 *Fraxinus excelsior* – *Acer campestre*-*Mercurialis perennis* woodland
W9 *Fraxinus excelsior* – *Sorbus aucuparia* – *Mercurialis perennis* woodland

Tilio-Acerion forests provide a habitat for a number of uncommon vascular plants, including, dark-red helleborine *Epipactis atrorubens*, violet helleborine *Epipactis purpurata*, wood fescue *Festuca altissima*, purple gromwell *Lithospermum purpureocaeruleum* and herb-Paris *Paris quadrifolia*, of which there is at least one colony of the latter present at this site. Many sites support notable bryophytes, in particular calcicoles associated with base-rich rock outcrops. Some localities have important assemblages of epiphytic lichens.

Qualifying Species:

N/A

Table 1: Supplementary Advice for Qualifying Features: H6130. Calaminarian grasslands of the *Violetalia calaminariae*; Grasslands on soils rich in heavy metals

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Extent and distribution of the feature	Extent of the feature within the site	Maintain the total extent of the feature.	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored.</p> <p>The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>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.</p> <p>Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>H6130. Calaminarian grassland is found in patches and mosaics throughout the site with the largest area concentrated in unit 10 of Ox Close SSSI.</p> <p>The extent of the feature is not fully understood but the current estimate is that there is less than 6 ha present on the site.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
Extent and distribution of the feature	Spatial distribution of the feature within the site	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site.	Distribution includes the spatial pattern or arrangement of this habitat feature, and its component vegetation types, across the site. Changes in distribution may affect the nature and range of the vegetation communities present, the operation of the physical, chemical, and biological processes in the system and	Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i> . Available from Natural England on request. See map at Appendix 1.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>the resiliency of the site and its features to changes or impacts.</p> <p>H6130 Calaminarian grassland occurs within Ox Close in near-natural forms on cliffs and scars, on old spoil-heaps from past lead-mining and on metal-enriched river alluvium. The majority of this grassland habitat on site is found on lead mine spoil.</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 moderate, 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 moderately so.</p> <p>This means that some adaptation action for specific issues may be required, such as reducing habitat fragmentation, creating more habitat to buffer the site or expand the habitat into more varied landscapes and addressing particular management and condition issues. Individual species may be more or less vulnerable than their habitat itself. In many cases, change will</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>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			be inevitable so appropriate monitoring would be advisable.	
Structure and function (including its typical species)	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>	
Structure and function (including its typical species)	Hydrology: Flooding regime	Restore the timing, frequency, extent and duration of surface flooding commensurate with the maintenance/restoration of the feature	<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.</p> <p>Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts.</p> <p>Some river shingle sites may be prone to flooding under extreme meteorological conditions. Depending on the frequency, timing and duration, such flooding has the potential to cause deleterious vegetation change and unfavourable condition.</p> <p>Due to the failure of a dam above Disher Force, the lead mining</p>	Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i> . Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			remains/mine spoil at Disher Force Level are suffering serious damage through water erosion. The incremental loss of the spoil during times of peak flow has accelerated the loss of material and poses a significant risk to the associated H6130 Calaminarian grassland.	
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.	<p>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.</p> <p>Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.</p> <p>The target for bare ground for H6130 Calaminarian grassland is between 20-90%. This reflect the requirement of metallophyte species for open ground.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p>
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.	<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. Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species.</p> <p>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>	
Structure and function (including its typical species)	Supporting off-site supply of heavy metals (river shingle sites)	Restore the ability of the surrounding catchment to supply river-borne heavy metals derived upstream from former mines or other metal-enriched shingle	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	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>component species.</p> <p>This supporting habitat may be critical to the typical species of the feature or to prevent/reduce/absorb damaging impacts from adjacent land uses e.g. pesticide drift, nutrient enrichment.</p> <p>The majority of the H6130 calaminarian grassland feature is present on lead mine spoil. No active mining will mean that lead and zinc will be lost from the spoil through natural processes, which in turn will reduce the toxicity of the spoil that the metalliferous plants rely on.</p> <p>Target set to Restore because of the failure of a dam above Disher Force, which is affecting the erosion and distribution of sediments in the catchment. The dam failure has implications for increasing sediment input downstream as well as accelerating chemical leaching into the Eller Beck watercourse. The outwash at Ballowfields will also be impacted to some degree. Erosion downstream of the eroding spoil can benefit the Calaminarian habitat (without exposure of relatively fresh contaminated soils the vegetation here will quickly develop into more typical calcareous, neutral grassland and even riparian trees/woodland), however increased flow velocity could also accelerate the removal of the contaminated material that the metalliferous plants rely on.</p>	<p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i>. Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176</p>
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>Alpine pennycress <i>Thlaspi caerulescens</i> Moonwort <i>Botrychium lunaria</i> Mountain pansy <i>Viola lutea</i> Pyrenean Scurvygrass <i>Cochlearia pyrenaica</i> Spring sandwort <i>Minuartia verna</i></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'). • 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, 	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		Thrift <i>Armeria maritima</i>	<p>predators or other species with a significant functional role linked to the habitat)</p> <ul style="list-style-type: none"> • Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC. <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary. The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p>	
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>OV37 <i>Festuca ovina</i> – <i>Minuartia verna</i> community</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>Due to the patchy and mosaic distribution of this feature, it is difficult to ascertain exact community composition, often owing to varying succession communities associated with these areas.</p>	
Structure and function (including its	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	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)			<p>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.</p> <p>Within Ox Close SAC, there are patches of OV37 <i>Festuca ovina</i> – <i>Minuartia verna</i> community in more open swards found within more disturbed or eroded areas of the site. Such areas are exposed to disturbance from footpath use and rabbits. Further OV37 <i>Festuca ovina</i> – <i>Minuartia verna</i> community is also found growing in more closed Festuca-dominated swards and tall herb communities with swards dominated by meadowsweet <i>Filipendula ulmaria</i>, water avens <i>Geum rivale</i> and devil's bit scabious <i>Succisa pratensis</i>.</p> <p>Communities that H6130 Calaminarian grassland transitions into include CG2 <i>Festuca ovina</i> – <i>Avenula pratensis</i> grassland, CG9 <i>Sesleria albicans</i> – <i>Galium sternerii</i> grassland, MG5 <i>Cynosurus cristatus</i> – <i>Centaurea nigra</i> grassland and M10 <i>Carex dioica</i> – <i>Pinguicula vulgaris</i> mire.</p>	<p>assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</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>Undesirable non-woody and woody vascular plants species may require active management to avert an unwanted succession to a different and less desirable state. Often they may be indicative of a negative trend relating to another aspect of a site's structure and function. These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/acceptable components or even dominants.</p> <p>Undesirable species include: Cow parsley <i>Anthriscus sylvestris</i>, Hogweed <i>Heracleum sphondylium</i>, False oat-grass <i>Arrhenatherum elatius</i>, Daisy <i>Bellis perennis</i>, Creeping thistle <i>Cirsium arvense</i>, Spear thistle <i>Cirsium vulgare</i>, Yorkshire fog <i>Holcus lanatus</i>, large docks (excluding Common sorrel <i>Rumex acetosa</i>), Perennial rye-grass <i>Lolium perenne</i>, Meadow buttercup <i>Ranunculus acris</i>, Creeping buttercup <i>Ranunculus repens</i>, Common ragwort <i>Senecio jacobaea</i>, Common nettle <i>Urtica dioica</i></p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
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).	<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.</p> <p>There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p> <p>Target set to Restore because the current levels of nitrogen and acid deposition (APIS accessed on 17/01/2019) are exceeding the critical loads for H6130 Calaminarian grassland.</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.</p> <p>Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i>. Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176</p>
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.	<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.</p> <p>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</p>	<p>Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i>. Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>management agreements.</p> <p>Typical conservation measures include grazing, cutting, scrub management, weed control. Retention of suitable land use infrastructure/patterns to enable site management e.g. pastoral livestock farming. Maintenance of local rabbit populations where applicable.</p> <p>The extent of Calaminarian grassland is likely to shrink in area or decline in condition if there is no continuing disturbance. Rabbits causing disturbance to the spoil is probably one of the main drivers in maintaining the habitat and keeping up lead levels against the forces of leaching and soil build-up. Further, grazing by rabbits and sheep prevent scrub encroachment on this H6130 Calaminarian grassland. Appropriate grazing and rabbit control is required.</p> <p>Work is being done through agri-environment agreements to prevent further erosion of the lead mining spoil and restore the site hydrology.</p>	
Version Control N/A				
Variations from national feature-framework of integrity-guidance: N/A				

Table 2: 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 at approximately 25.21 hectares.	<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.</p> <p>The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information. The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features.</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> <p>H6210. Semi-natural dry grasslands and scrubland facies is found in patches and mosaics throughout the site with the largest areas concentrated in SSSI units 9, 10 and a small amount in unit 11. The area figure may be an over-estimate of true target habitat given the mosaic nature of the vegetation.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
Extent and distribution of the feature	Spatial distribution of the feature within the site	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	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	Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i> . Available from Natural England on request. See map at Appendix 1.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat.</p> <p>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.</p> <p>These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature.</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 moderate, 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 moderately so.</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>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>This means that some adaptation action for specific issues may be required, such as reducing habitat fragmentation, creating more habitat to buffer the site or expand the habitat into more varied landscapes and addressing particular management and condition issues. Individual species may be more or less vulnerable than their habitat itself. In many cases, change will be inevitable so appropriate monitoring would be advisable.</p>	
Structure and function (including its typical species)	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.</p> <p>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>	
Structure and function (including its typical species)	Soils, substrate and nutrient cycling	Restore 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>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>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			On a local basis, large areas of bare ground have been recorded, attributed to rabbits with soil erosion on slopes. This needs to be monitored and restored through control measures and exclusion zones as appropriate.	Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i> . Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176
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.	<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. Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species.</p> <p>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>	
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 CG9 <i>Sesleria albicans</i> – <i>Galium sternerii</i> grassland, CG2 <i>Festuca ovina</i> – <i>Avenula pratensis</i> grassland and CG10 <i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Thymus praecox</i> grassland communities which form a key component of the H6210 feature on this site.</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'). • 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 	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Crofts, A. & Jefferson, R.G. (Eds.) 1999. <i>The Lowland Grassland Management Handbook. Chapter 10</i>. Available at: http://webarchive.nationalarchives.gov.uk/20170302164022/http://publications.naturalengland.org.uk/publication/35034?category=42003</p> <p>Natural England, 2008. <i>Favourable Condition Table for</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>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>	<p><i>Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
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>CG9 <i>Sesleria albicans</i> – <i>Galium sternerii</i> grassland</p> <p>And a lesser quantity of CG2 <i>Festuca ovina</i> – <i>Avenula pratensis</i> grassland and CG10 <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Thymus praecox</i> grassland</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. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>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>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
Structure and function (including its typical species)	Vegetation community transitions	Maintain the pattern of natural vegetation transitions	<p>Transitions 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.</p> <p>CG9 <i>Sesleria albicans</i> – <i>Galium sternerii</i> grassland occurs grading into CG10 <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Thymus praecox</i> grassland. These transitions are gradual and difficult to</p>	<p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>map accurately, and calcareous influence can be quite weak.</p> <p>Further transitions exist on site from G9 <i>Sesleria albicans</i> – <i>Galium sternerii</i> grassland grading into tall herb communities with Wood sage <i>Teucrium scorodonia</i> and Dog's-mercury <i>Mercurialis perennis</i> and transitions to W8 <i>Fraxinus excelsior</i> - <i>Acer campestre</i> - <i>Mercurialis perennis</i> woodland around edge habitats.</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 30%-90%	<p>A high cover of characteristic herbs, including sedges (<i>Carex</i> species) is typical of the structure of this habitat type.</p> <p>A low proportion outside this target indicates eutrophication, usually from fertilisers, or insufficient removal of biomass, leading to dominance by grasses. Overall due to agri-environment agreements focusing on appropriate grazing, management is now in place and the majority of the H6210 Semi-natural dry grasslands and scrubland facies is within the target range.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i>. Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176</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 <i>Cotoneaster</i> spp., or coarse and aggressive native species which may uncharacteristically dominate the composition of the feature.</p> <p>Weed encroachment, especially thistles, is reaching the limit of the acceptable threshold and on a local basis only, rabbits need controlling to prevent over grazing.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Crofts, A. & Jefferson, R.G. (Eds.) 1999. <i>The Lowland Grassland Management Handbook</i>. Chapter 10. Available at: http://webarchive.nationalarchives.gov.uk/20170302164022/http://</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>Undesirable species may include: Bracken <i>Pteridium aquilinum</i>, False oat-grass <i>Arrhenatherum elatius</i>, Creeping thistle <i>Cirsium arvense</i>, Spear thistle <i>Cirsium vulgare</i>, Crested dog's-tail <i>Cynosurus cristatus</i>, large docks (excluding <i>Rumex acetosa</i>), False-brome <i>Brachypodium sylvaticum</i>, Perennial ryegrass <i>Lolium perenne</i>, Common ragwort <i>Senecio jacobaea</i>, Common nettle <i>Urtica dioica</i></p> <p>Bracken <i>Pteridium aquilinum</i> is an issue on a local basis particularly on more neutral and deeper soils in particular. If bracken cover exceeds the target of <10% cover this indicates that the habitat is not being managed sufficiently e.g. no cutting or rolling.</p> <p>False-brome <i>Brachypodium sylvaticum</i> is common on the grass/woodland boundary. If encroaching on to the main calcareous grassland feature then this may indicate undergrazing. Scrub needs to be monitored, especially on the woodland edge to prevent spreading onto the grassland.</p>	<p>publications.naturalengland.org.uk/publication/35034?category=42003</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
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).	<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.</p> <p>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-</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 .

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>natural habitats are still under development.</p> <p>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 17/01/2019) are exceeding the critical loads for H6210 grassland.</p>	
Supporting processes (on which the feature relies)	Conservation measures	Restore the management measures which are necessary to maintain the structure, functions and supporting processes associated with the feature	<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.</p> <p>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>Rabbit control, ensuring an appropriate livestock grazing management regime and the control of bracken are the main concerns within Ox Close SAC for H6210 Semi-natural dry grasslands and scrubland facies.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i>. Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176</p>
Version Control N/A				
Variations from national feature-framework of integrity-guidance: N/A				

Table 3: Supplementary Advice for Qualifying Features: H9180. Tilio-Acerion forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes

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 at 7.44 hectares.	<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 tree roots (particularly of veteran trees) can extend a considerable distance beyond the boundary of the site - they can be impacted by soil compaction (such as caused by vehicles or construction works); agricultural operations or other soil disturbance (like trenches); and agro chemicals or other chemicals which get into the soil.</p> <p>Any loss of woodland area - whether at the edge or in the middle of a site will reduce the core woodland area where woodland 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 will clearly disturb the movement of species between the remaining parts of the woodland.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			H9180 Tilio-Acerion forests of slopes, screes and ravines is found along the slopes of Haw Bank (Haw Bank Woodland).	
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.</p> <p>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.</p> <p>These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature.</p> <p>H9180 Tilio-Acerion forests of slopes, screes and ravines is found along the slopes of Haw Bank.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
Structure and function (including its typical species)	Adaptation and resilience	Maintain the resilience of the feature by ensuring a diversity of site-native trees.	<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</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/495459459137</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>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 moderate, 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 moderately so.</p> <p>This means that some adaptation action for specific issues may be required, such as reducing habitat fragmentation, creating more habitat to buffer the site or expand the habitat into more varied landscapes and addressing particular management and condition issues. Individual species may be more or less vulnerable than their habitat itself. In many cases, change will be inevitable so appropriate monitoring would be advisable.</p>	5360
Structure and function (including its typical species)	Browsing and grazing by herbivores	Restore browsing at a (low) level that allows well developed understorey with no obvious browse line, & lush ground vegetation with some grazing sensitive species evident (bramble, ivy <i>etc.</i>), and tree seedlings and sapling common in gaps.	<p>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.</p> <p>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,</p>	Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i> . Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>bark-stripping and a heavily grazed sward.</p> <p>Overgrazing, especially of seedlings and new growth from high livestock numbers and high rabbit numbers is a concern on site.</p> <p>Deer are also present on Ox Close SAC but their population numbers and associated impacts are currently unknown.</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> <p>There should be at least 95% of cover in any one layer of site-native or acceptable naturalised species.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p>
Structure and function (including its typical species)	Regeneration potential	Maintain the potential for sufficient natural regeneration of desirable trees and shrubs; typically tree seedlings of desirable species (measured by seedlings and <1.3m saplings - above grazing and browsing height) should be visible in sufficient numbers in gaps, at the wood edge and/or as regrowth as appropriate ;	<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</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2014. <i>Ox Close</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>included where this is happening.</p> <p>Regeneration may often occur on the edges of woods rather than in gaps within it. The density of regeneration considered sufficient is clearly less in parkland than in high forest; in coppice most of the regeneration will be as stump regrowth. The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p> <p>There should be signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 year period (or equivalent regrowth). There should also be less than 20% of areas regenerated by planting and all planted trees must be of local stock and not planted in areas where there has not been trees within the last 15 years.</p> <p>On a location by location basis, ensure sufficient management is in place to ensure regeneration is not prevented by dense bracken mats/shading and overgrazing.</p>	<p>SAC Site Improvement Plan Version 1.0. Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176</p>
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.	<p>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.</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)	Key structural, influential and/or distinctive species	<p>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature:</p> <p>The constant and preferential plants of the W8 <i>Fraxinus</i></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 	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p><i>excelsior</i> – <i>Sorbus aucuparia</i> woodland community type which forms a key component of the H9180 feature.</p> <p>Small leaved lime <i>Tilia cordata</i> Large-leaved lime <i>T. platyphyllos</i> Birds eye primrose <i>Primula</i> Herb Paris <i>Paris quadrifolia</i></p> <p>At least 80% of the ground flora cover should be referable to the relevant NVC community where there is >75% canopy cover.</p>	<p>SAC (see also the attribute for 'vegetation community composition').</p> <ul style="list-style-type: none"> • 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> <p>The wood at Ox Close SAC comprises mostly old and currently abandoned hazel coppice.</p> <p>Sycamore in canopy is considered site native, but not in the understorey.</p> <p>Where wood pasture there should be a species rich CG9/U4 sward in open areas and more woodland sward under cover.</p>	<p>Ox Close SSSI. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
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>W8 <i>Fraxinus excelsior</i> – <i>Sorbus</i></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. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring these characteristic and distinctive</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<i>aucuparia</i> woodland	<p>vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature.</p> <p>The wood at Ox Close SAC comprises old and currently abandoned hazel coppice with very little/sparse canopy cover.</p> <p>Ash dieback <i>Chalara fraxinea</i> has the potential to cause significant damage to the SAC's very limited ash population. Ash only occurs at a low frequency within the woodland and any outbreak in the locality could rapidly impact the ash standards present.</p>	Natural England on request.
Structure and function (including its typical species)	Vegetation structure - age class distribution	Maintain at least 3 age classes (pole stage/ medium/ mature) spread across the average life expectancy of the commonest trees.	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 - 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).</p> <p>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.</p>	Natural England, 2014. <i>Ox Close SAC Site Improvement Plan Version 1.0</i> . Available at: http://publications.naturalengland.org.uk/publication/5946062434992128?category=5171232873906176

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			There is limited amount of active management within the woodland. As the majority of the wood at Ox Close SAC comprises old and currently abandoned hazel coppice with very little/sparse canopy cover, a lack of management could result in the neglected stools developing substantial stems and becoming unstable. Such stools are likely to have significantly shorter lifespans compared with those in a managed wood. This has resulted in trialling the reintroduction of coppice management at Haw Bank Wood.	
Structure and function (including its typical species)	Vegetation structure - dead wood	Maintain the continuity and abundance of standing or fallen dead and decaying wood, typically between 30 - 50 m ³ per hectare of standing or fallen timber or 3-5 fallen trees >30cm per hectare, and >10 standing dead trees per hectare	Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. In old coppice woodland the diameter of deadwood is often smaller than in other 'high forest' woods.	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i> . Available from Natural England on request.
Structure and function (including its typical species)	Vegetation structure - old growth	Maintain the extent and continuity of undisturbed, mature/old growth stands (typically comprising at least 20% of the feature at any one time) and the assemblages of veteran and ancient trees (typically >10 trees per hectare).	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.	
Structure and function (including its typical species)	Vegetation structure - open space	Maintain areas of permanent/temporary open space within the woodland	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)		feature, typically to cover approximately 10% of area	<p>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.</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. 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> <p>However, in coppiced stands a lower canopy cover (of standards) can be accepted. A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p>	<p>assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p>
Structure and function (including its typical species)	Vegetation structure - shrub layer	Maintain an understorey of shrubs cover 20 - 60% of the stand area (this will vary with light levels and site objectives)	<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>Within Ox Close SAC, woodland frequently grades into scrub and has a variable ground flora, often in more open areas with CG9/MG5 species.</p>	<p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England, 2008. <i>Favourable Condition Table for Ox Close SSSI</i>. Available from Natural England on request.</p> <p>Natural England, 2015. <i>Field Unit Survey Vegetation Mapping</i>. Available from Natural England on request. See map at Appendix 1.</p>
Structure and function	Vegetation structure -	Maintain a graduated woodland edge into adjacent semi-natural	Woodland edge is defined as being the transitional zone between the forest feature and adjacent but different habitat	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
(including its typical species)	woodland edge	open habitats, other woodland/wood-pasture types or scrub.	<p>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.</p> <p>Grasslands / arable fields managed with high doses of artificial nutrients may prevent gradation of woodland edge and could have other impacts on the integrity of the site (pollution/ nutrient enrichment <i>etc.</i>).</p>	
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).	<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. 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.</p> <p>There are critical levels for ammonia (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>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>	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 .
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	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	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		critical functional connection with the site	<p>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)	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 is included as 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 <i>etc.</i></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.</p> <p>For example, light pollution (from direct glare, chronically increased illumination and/or temporary, unexpected</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>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.</p> <p>Currently there is no available data on the effect of illumination on H9180 Tilio-Acerion forests of slopes, screes and ravines.</p>	
Version Control N/A				
Variations from national feature-framework of integrity-guidance: N/A				

Appendix 1: Broad Habitat Map - 2015

