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

Lydden and Temple Ewell Downs Special Area of Conservation (SAC)
Site Code: UK0012834

Photograph courtesy of Kent Wildlife Trust

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Lydden and Temple Ewell Downs 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	Lydden and Temple Ewell Downs Special Area of Conservation (SAC)
Location	Kent
Site Boundary	The designated boundary of this site can be viewed here on the MAGIC website
Designation Date	*1st April 2005*
Qualifying Features	See section below
Designation Area	61.70
Designation Changes	NA
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)	Lydden and Temple Ewell Downs SSSI
Relationship with other European or International Site designations	Not Applicable

Site background and geography

The soft rounded contours of hill and bank that are the Lydden and Temple Ewell Downs reflect the wider North Downs of Kent, where there is more woodland than might be expected. This chalk downland landscape is centuries old and the hills have been described as having a 'sweetness' (Henry Gay Hewlett 1880) rather than the majesty of other Downland landscapes of the Southern Britain.

Lydden and Temple Ewell Downs sits within the North Downs National Character Area (NCA Profile 119) and is eastern dip slope country. The wider chalk scarp slopes form a defining feature along the length of the North Downs and panoramic views provide links with adjoining landscapes.

Lydden and Temple Ewell SAC is also a National Nature Reserve. As well as the chalk downland of international importance, these reserves are key sites for biodiversity and also offer a range of access and education opportunities.

About the qualifying features of the SAC

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

Qualifying habitats:

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

This site includes some of the richest chalk grassland in Kent, with outstanding assemblages of plants and invertebrates. Most of the grassland is situated on the steep south-west facing slopes on the thinnest soils and is dominated by tor-grass *Brachypodium pinnatum*, sheep's-fescue *Festuca ovina*, creeping bent *Agrostis stolonifera*, and upright brome *Bromopsis erecta*. Grazing pressure varies over the length of the site, resulting in a gradation within the habitat from a rank tor-grass sward to close-cropped fescue grassland.

The history of continued grazing on this site has resulted in the retention of many characteristic downland herbs such as squinancywort *Asperula cynanchica*, horseshoe vetch *Hippocrepis comosa*, chalk milkwort *Polygala calcarea* and fragrant orchid *Gymnadenia conopsea*. It contains an important assemblage of rare, scarce and uncommon species, including early spider-orchid *Ophrys sphegodes*, burnt orchid *Orchis ustulata*, musk orchid *Herminium monorchis* and autumn lady's-tresses *Spiranthes spiralis*.

Qualifying Species:

Not Applicable

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

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Extent and distribution of the feature	**Extent of the feature within the site**	Maintain the total extent of the feature to 46 hectares.	There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information. The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.	Kent Habitat Survey 2003 https://www.kent.gov.uk/waste-planning-and-land/kent-landscape-information-system/resources/klis-habitat-survey-data-resources Natural England (2007) Definition of Favourable Condition – Lydden & Temple Ewell Downs (Consultation Draft) (Available on request from Natural England) This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments
Extent and distribution of the feature	**Spatial distribution of the feature within the site**	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction. These fragments also have a greater amount of open edge habitat which will differ in the	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature.	
Structure and function (including its typical species)	**Vegetation community composition**	Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types: • CG4 *Brachypodium pinnatum* grassland • CG5 *Bromus erectus-Brachypodium pinnatum* grassland	This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC). Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).	
Structure and function (including its typical species)	**Vegetation: proportion of herbs (including Carex spp)**	Maintain the proportion of herbaceous species within the range 40%-90%	A high cover of characteristic herbs of chalk grassland, including sedges (Carex species) is typical of the structure of this habitat type.	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments .
Structure and function (including its typical species)	**Key structural, influential and/or distinctive species**	Maintain the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat. • Constant and preferential plant species of CG4 and CG5 grassland NVC communities • Vascular plant assemblage including: Early Spider Orchid *Ophrys sphegodes*; Musk	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; • **Influential** species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat) • **Site-distinctive** species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC. There may be natural fluctuations in the frequency and cover of each of	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments Sutton, P. G. (2015) *A review of the Orthoptera (Grasshoppers and crickets) and allied species of Great Britain*: Natural England. Carne, C. (2016) The future of the Wart-biter

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		Orchid *Herminium monorchis;* Burnt-tip Orchid *Orchis ustulata; Fragrant Orchid Gymnadenia conopsea;* Autumn Ladies-tresses *Spiranthes spiralis;* Slender Bedstraw *Galium pumilum* • Silver spotted Skipper *Hesperia comma* • Wart-biter Bush Cricket *Decticus verrucivorus*	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. In the 1985 40 burnt tip orchids, 40 musk orchids and 100 early spider orchids and 40 slender bedstraw plants were counted. No regular counts have taken place since then. In the UK, the Wart-biter Bush Cricket is only found in the south of England. It is unclear how widespread the species was in the past, and it may always have been rare in England, but it now survives at only 5 sites, Calstone Downs in Wiltshire, Castle Hill, Mount Caburn and Deep Dene in East Sussex, and Lydden Temple Ewell in Kent. At three of these sites the cricket became extinct and had to be reintroduced, at Lydden Temple Ewell and Mount Caburn in the 1990s and 2000 and at Deep Dene in 2015. The species is considered to be endangered in the UK, and thus facing a very high risk of extinction in the wild in the near future (Sutton, 2015).	Bush Cricket in Kent Predicting habitat suitability under future climates using MAXENT. Report for The Species Recovery Trust
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: • Undesirable species should be no more than occasional throughout the sward or singly or together more than 5% cover • Trees and shrub cover	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. Hawthorn, Blackthorn, bramble and ash (affected by dieback so declining risk) are invasive on the Lydden and Temple Ewell Downs. Undesirable species include: *Cirsium arvense, Cirsium vulgare, Rumex crispus, Rumex obtusifolius, Senecio jacobaea, Urtica dioica.*	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		should be no more than 5%		
Structure and function (including its typical species)	**Vegetation community transitions**	Maintain the pattern of natural vegetation zonations/transitions	Transitions/zonations between adjacent but different vegetation communities are usually related to naturally-occurring changes in soil, aspect or slope. Such 'ecotones' retain characteristics of each bordering community and can add value in often containing species not found in the adjacent communities. Retaining such transitions can provide further diversity to the habitat feature, and support additional flora and fauna.	See comments above.
Structure and function (including its typical species)	**Soils, substrate and nutrient cycling**	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.	Soil is the foundation of basic ecosystem function and its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.	
Structure and function (including its typical species)	**Supporting off-site habitat**	Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support the feature.	Include only where applicable. The structure and function of the qualifying habitat, including its typical species, may rely upon the continued presence of areas which surround and are outside of the designated site boundary. Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species. This supporting habitat may be critical to the typical species of the feature to support their feeding, breeding, roosting, population dynamics ('metapopulations'), pollination or to prevent/reduce/ absorb damaging impacts from adjacent land uses e.g. pesticide drift, nutrient enrichment. Some surrounding land outside the SAC boundary is identified as priority habitat. Other stewardship land has yet to be assessed as to success of chalk grassland creation.	
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	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.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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. Much of the land within the SAC is managed by Kent Wildlife Trust. There are several agri-environment schemes surrounding the SAC boundaries improving the opportunities for chalk grassland species to spread. Maintaining and increasing the sympathetic management within the wider landscape is key to ensure that the SAC special features survive.	
Structure and function (including its typical species)	**Adaptation and resilience**	Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site	This recognises the increasing likelihood of natural habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. Such environmental changes may include changes in sea levels, precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary. Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability. The overall vulnerability of this particular SAC to climate change has been assessed by Natural England as being low, taking into account the sensitivity, fragmentation, topography and management of its habitats. 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 required.	Natural England, 2015. Climate Change Theme Plan and supporting NBCCV Assessments for SACs and SPAs

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature relies)	**Air quality**	Maintain as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH3), oxides of nitrogen (NOx) and sulphur dioxide (SO2), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk). Natural England (2015) Site Improvement Plan – Lydden & Temple Ewell Downs SAC (SIP Profile 127)
Supporting processes (on which the feature relies)	**Conservation measures**	Restore as necessary the management measures (either within and/or outside the site boundary as appropriate) which are necessary to restore the structure, functions and supporting processes associated with the feature	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, the Views about Management Statement for the underpinning SSSI and/or management agreements. Livestock grazing and managing the public are key issues (chalk downland has public access). Rabbit populations do fluctuate and can cause damage and loss of key species.	Natural England (2015) Site Improvement Plan – Lydden & Temple Ewell Downs SAC (SIP Profile 127)
Version Control: Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: N/A				