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

Peter's Pit Special Area of Conservation (SAC) (UK0030237)

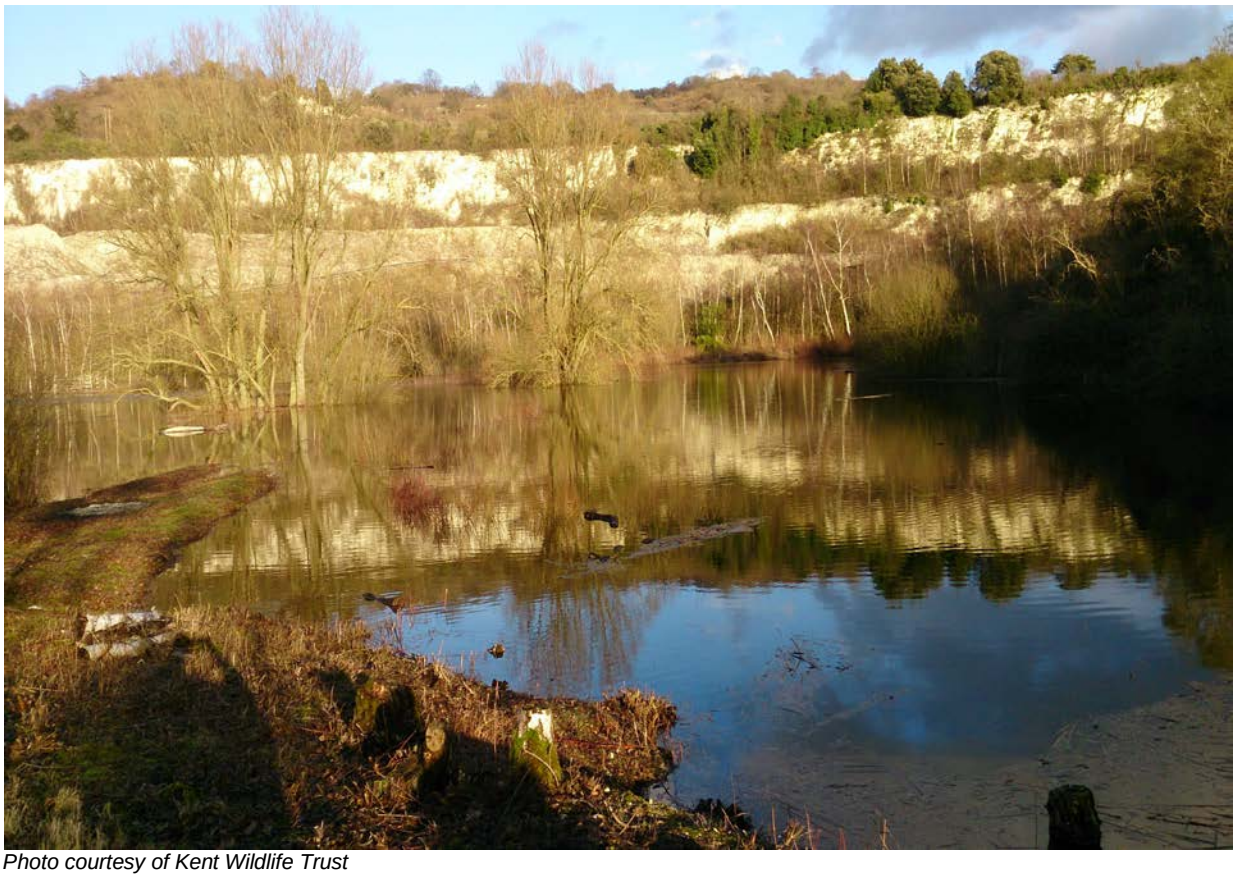

Photo courtesy of Kent Wildlife Trust

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About this document

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

This advice should therefore be read together with the SAC Conservation Objectives available here.

This supplementary advice to the Conservation Objectives describes in more detail the range of ecological attributes which are most likely to contribute to a site's overall integrity and the minimum targets each qualifying feature needs to achieve in order to meet the site's objectives.

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. Any proposals or operations which may affect the site or its qualifying features should be designed so they do not adversely affect any of the attributes listed in the objectives and supplementary advice.

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 HDIRConservationObjectives@naturalengland.org.uk

About this site

European Site information

Name of European Site	Peter's Pit Special Area of Conservation
Location	Kent The designated boundary of this site can be viewed here on the MAGIC website.
Designation Date	May 2001
Qualifying Features	See below
Designation Area	28.3 hectares
Designation Changes	Not applicable
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Peter's Pit SSSI
Relationship with other European or International Site designations	Not applicable.

Site background and geography

Covering a total area of 28.91 hectares, Peter's Pit is an old chalk quarry situated in the North Downs in north Kent, with large ponds situated amongst grassland, scrub and woodland. The ponds have widely fluctuating water levels and large great crested newt *Triturus cristatus* populations have been recorded breeding here.

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 species:

- **S1166 Great Crested Newt *Triturus cristatus***

  The great crested newt *Triturus cristatus* is the largest native British newt, reaching up to around 17cms in length. It has a granular skin texture (caused by glands which contain toxins making it unpalatable to predators), and in the terrestrial phase is dark grey, brown or black over most of the body, with a bright yellow/orange and black belly pattern.

  Adult males have distinctive jagged crests running along the body and tail. Newts require aquatic habitats for breeding. Eggs are laid singly on pond vegetation in spring, and larvae develop over summer to emerge in August – October, normally taking 2–4 years to reach maturity. Juveniles

spend most time on land, and all terrestrial phases may range a considerable distance from breeding sites.

Breeding sites are mainly medium-sized ponds, though ditches and other water body types may also be used less frequently. Ponds with ample aquatic vegetation (which is used for egg-laying) seem to be preferred. Great crested newts can be found in rural, urban and post-industrial settings, with populations less able to thrive where there are high degrees of fragmentation. The connectivity of the landscape is important, since great crested newts often occur in meta-populations that encompass a cluster of several or many ponds. This helps ensure the survival of populations even if sub-populations are affected by, for example, the temporary drying-out of breeding ponds.

The great crested newt is also fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended), making it a European Protected Species. A Licence may therefore be required for any activities likely to harm or disturb great crested newts.

Great Crested Newt (female)

Table 1: Supplementary Advice for Qualifying Features: S1166 Great Crested Newt *Triturus cristatus*

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/function	Overall Habitat Suitability Index score	Maintain an overall Great Crested Newt Habitat Suitability Index score of no less than 0.8	The Habitat Suitability Index provides an overall measure of evaluating habitat quality and quantity for Great Crested Newts. The Index score lies between 0 and 1, with 1 representing optimal Great Crested Newt habitat. In general, the higher the index score the more likely the site is to support great crested newts. The HSI methodology is documented in ARG-UK Advice Note 5 (May 2010). The HSI should not be used as a substitute for more detailed surveys and consideration of other attributes where necessary.	
	Presence of ponds	Maintain the number and surface area of ponds present within the site. Number = 12 ponds Surface area = 1.06 ha	Ponds include breeding and non-breeding ponds, since the latter may be used for foraging or sustaining prey populations. The surface area of a pond is taken from when water reaches its highest level (excluding flooding events), which will usually be in the spring.	Habitat features extent from Natural England 2006 GIS dataset. 4 original ponds (2000) supplemented by 8 new ponds created by Kent Wildlife Trust (2012). This attribute will be periodically monitored as part of Natural England's site condition assessments.
	Permanence of ponds	Maintain the permanence of water within ponds present within the site	Ponds include breeding ponds as well as non-breeding ponds, since the latter may be used for foraging or sustaining prey populations. Ponds should have a high degree of permanence (i.e. they never or rarely dry out other than though natural drought) and this may be adversely affected by changes in the supply or flow of water (from either surface water and/or groundwater sources] to the ponds. At this SAC, The quarry ponds are located on bare chalk and depend on the water table in the chalk aquifer. The site has maintained a high newt population despite all the ponds being dry by early spring in some years.	This attribute will be periodically monitored as part of Natural England's site condition assessments.

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			Although not ideal in such years it does have the benefit of restricting colonisation by fish. The more permanent ponds in the soil-stripped fields are a safeguard against prolonged droughts.	
Supporting habitat: structure/function	Cover of macrophytes	Maintain a high cover of macrophytes, typically between 50-80%, within ponds	Marginal and emergent vegetation are important components of a great crested newt pond as they provide excellent egg-laying sites. Good plants for this purpose include water forget-me-not *Myosotis scorpioides*, flote/sweet grass *Glyceria fluitans* and great hairy willowherb *Epilobium hirsutum*. They are, however, an integral part of the natural successional change of a waterbody and whilst it is preferable to have a good range and area of marginal plants, they should not extend across the entire water surface. In most circumstances it will be desirable to retain a fringe of marginal and emergent vegetation around at least half of a pond's edge. Where the marginal vegetation is particularly invasive, and provides no specific benefit to crested newts, it may be decided that its complete removal is necessary.	This attribute will be periodically monitored as part of Natural England's site condition assessments.
	Invasive, non-native and/or introduced species	Ensure invasive non-native species are either rare or absent components of open water habitat supporting the great crested newt.	Submerged vegetation is an important component of the pond ecosystem, making it habitable to a wide range of animals, but too many plants can occasionally be undesirable for newts, if the water column becomes completely shaded and choked. Introduced or 'alien' submerged plants can grow very vigorously and dominate more beneficial native species. New Zealand stonecrop *Crassula helmsii* and Canadian pondweed *Elodea canadensis* are two examples to be avoided. In most instances, any introductions should be avoided and if present the complete removal of such species is usually recommended.	
	Supporting terrestrial habitat quality	Maintain the quality of terrestrial habitat likely to be utilised by Great Crested Newts, with no fragmentation of habitat by significant barriers to newt dispersal.	Great crested newts need both aquatic and terrestrial habitat. Good quality terrestrial habitat, particularly within 500m of the breeding ponds, provides important sheltering, dispersing and foraging conditions and can include all semi-natural habitat along with meadows, rough tussocky grassland, scrub, woodland, as well as 'brownfield' land or low-intensity farmland. Good quality terrestrial habitat for Great Crested Newts has structural diversity which can be provided by features such as hedges, ditches, stone walls, old farm buildings, loose stone/rocks, rabbit burrows and small mammal holes. Good habitat provides a range of invertebrates, such as earthworms, insects, spiders and slugs, on which Great Crested Newts are known to feed. Fragmentation refers to significant barriers to Great Crested Newt	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			movement such as walls and buildings, but not footpaths or tracks. Newts disperse over land to forage for food, and move between ponds. The distances moved during dispersal vary widely according to habitat quality and availability. At most sites, the majority of adults probably stay within 250m of the breeding pond but may well travel further if there are areas of high quality foraging and refuge habitat extending beyond this range.	
Supporting habitat: structure/function	Shading of ponds	Maintain pond perimeters generally free of shade (typically affecting less than 60% of the shoreline)	Shading from trees and/or buildings (not including emergent pond vegetation) can negatively affect the abundance of marginal vegetation in ponds, water temperature and the rate of hatching and development of great crested newt eggs and larvae.	This attribute will be periodically monitored as part of Natural England's site condition assessments.
	Presence of fish and wildfowl	Ensure fish and wildfowl are either absent or rare in all ponds.	At high densities, waterfowl (i.e. most water birds such as ducks, geese and swans but excluding moorhen) can remove all aquatic vegetation, adversely affect water quality and create turbid pondwater conditions. Some may also actively hunt adult Great Crested Newts and their larvae. Similarly fish can be significant predators of Great Crested Newt larvae. The presence of waterfowl and fish can therefore reduce habitat suitability. These should be wholly absent from sites which support fewer than 5 ponds.	This attribute will be periodically monitored as part of Natural England's site condition assessments.
Supporting processes (on which the feature or its supporting habitat relies)	Water quality	Maintain the quality of pondwaters within the site as indicated by the presence of an abundant and diverse invertebrate community.	As the clarity and chemical status of water bodies supporting Great Crested Newts can be subjective, the presence of an abundant and diverse community of freshwater invertebrates can be indicative of suitable water quality standards. Invertebrate groups present should include groups such as mayfly larvae and water shrimps. This will ensure ponds support a healthy (mainly invertebrate) fauna to provide food for developing great crested newt larvae and adults.	
Population (of the feature)	Population size	Maintain the abundance of the great crested newt population at a level which is above a peak mean of 332 adults, whilst avoiding deterioration from its current level as indicated by the	"This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's	The peak mean count is based on the three consecutive years (2002 – 2004) after the SSSI boundary was modified and

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		latest mean peak count or equivalent	size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (generally at least 10 years). The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature. Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment. Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise that the figures stated are the best available. Estimating the average size of the GCN population will normally be based on the peak count of adults undertaken in the known peak season for the area, and in-year weather conditions; likely to be Mid-April to mid-May in central areas. The peak count is derived by summing the counts across the site on 'best' night for each season. Considerable natural between-year variation in population counts is frequent."	the SAC designated (2001), because prior to this counting was irregular. (The figure at al SSSI notification was 311 in 1985) This attribute will be periodically monitored as part of Natural England's site condition assessments.
Population (of the feature)	Population viability	Maintain the presence of Great Crested Newt eggs in breeding ponds at a level which is likely to maintain the abundance of the great crested newt population at or above its target level.	A "breeding pond" is defined as a pond in which egg-laying and successful metamorphosis (e.g. the pond doesn't dry up too soon) is likely to occur at least once every three years. The optimum time to survey for eggs is mid-March to mid-May. Presence of eggs can be recorded by day or night visits and surveys should be combined with visits for the adult component.	This attribute will be periodically monitored as part of Natural England's site condition assessments.
	Supporting	Maintain the connectivity of	Great Crested Newts often exist in metapopulations. A metapopulation is a	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
	metapopulation	the SAC population with other closely-associated populations (either within or outside of the site boundary)	group of associated populations made up of newts which breed in, and live around, a cluster of ponds. There will be some interchange of newts between these populations, even though most adults consistently return to the same pond to breed, and so it will be important to avoid the isolation of these populations from each other. A metapopulation associated with a SAC may occur and extend outside of the designated site boundary. The connectivity of the wider local landscape to the SAC may therefore be important as this may help the safe movement of animals and ensure the survival of the overall population even if sub-populations are temporarily affected by, for example, pond desiccation or fish introductions.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Conservation measures	Maintain management or other measures (within and/or outside the site boundary as appropriate) necessary to maintain or restore the feature and/or its supporting habitat	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.	Natural England's Views about the Management of the SSSI which underpin this SAC are available from http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm
Supporting habitat: extent and distribution	Extent of supporting habitat	Maintain the extent of habitat which supports the feature at: Broadleaved, Mixed and Yew Woodlands: 13.89 ha Lowland calcareous grassland/inland rock/scrub mosaic: 13.94 ha	In order to contribute towards the objective of achieving an overall favourable conservation status of the feature at a UK level, it is important to maintain or if appropriate restore the extent of supporting habitats and their range within this SAC. The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending on the nature, age and accuracy of data collection, and may be subject to periodic review in light of improvements in data. The broad habitats known or likely to support the feature at this SAC are: standing water, lowland calcareous grassland/inland rock/scrub mosaic.	Habitat extent taken from NE GIS 2006 dataset
	Distribution of supporting habitat	Maintain the distribution and continuity of the feature's supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the	A contraction in the range, or geographic spread, of the supporting habitat (and its component vegetation) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine the resilience of the Great Crested Newt feature to adapt to future environmental changes. Contraction may also reduce and break up the continuity of a habitat within	Habitat extent taken from NE GIS 2006 dataset

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		site	a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for this feature and this may affect its viability.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Adaptation and resilience	Maintain the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site	This recognises the increasing likelihood of supporting habitat features 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. 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.	
Supporting habitat: structure/function	Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, within typical values for the supporting habitat	Soil and substrate supports basic ecosystem function and is a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with the supporting habitat of this Annex I feature.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Air quality	Maintain or 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).	The supporting habitat type is considered sensitive to changes in air quality. Exceedance of 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 reducing supporting habitat quality and population viability of this feature. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH3), oxides of nitrogen (NOx) and sulphur dioxide	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk).

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			(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.	
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