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

Clints Quarry Special Area of Conservation (SAC)
Site code: UK0030035

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Clints Quarry 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	Clints Quarry Special Area of Conservation (SAC)
Location	Cumbria
Site Maps	The designated boundary of this site can be viewed on the MAGiC website here.
Designation Date	3 February 1997
Qualifying Features	See section below
Designation Area	12.03 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)	Clints Quarry Moota SSSI
Relationship with other European or International Site designations	N/A

Site background and geography

Clints Quarry, Moota, is a disused limestone quarry situated just within the Lake District National Park between Cockermouth and Wigton. It lies within the Cumbrian High Fell National Character Area.

Generally warm and temperate with a high rainfall with a Met office 1981-2010 average annual rainfall of 152mm, average maximum temperature of 13C minimum 5.8C.

The quarry and fringing land is Aeolian silty drift over Carboniferous and Jurassic limestone. With rocky outcrops and low fertility, previous agricultural use has been for grazing.

Quarrying dating back from at least since 1951 which was the first planning permission. Quarrying ceased completely in the 1980's. The only infrastructure left are processing sheds to the north of the site.

There is no public access close to the site although in the past there has been unauthorised access with cars being driven around and dumped, this has mostly been resolved with the placing of a padlocked barriers to prevent unauthorised access. The closest access to the site is from the A595 where the top and bottom quarry can be accessed via a rough track.

The site is of interest for its large population of the great crested newt *Triturus cristatus.* The site is in two parts, based on two of the three former quarries which contains standing water. The Clints Quarry site can be seen as a stable base from which a much wider area could be colonised by this species.

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 species for which this SAC has been designated.

Qualifying Species:

S1166 Great crested newt *Triturus cristatus*

The great crested newt is the largest native British newt, reaching up to around 17cms in length. 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.

At Clints Quarry great crested newts were in field ponds before and during limestone quarrying. When quarrying ceased in 1980s this allowed an expansion of the population. There are three ponds on the site, one in the lower quarry, and two in the upper quarry. All contribute to an exceptional population of great crested newts within the site. The population is a successful one since eggs, larvae and juvenile newts have been recorded throughout.

The surrounding terrestrial habitat consists of sparsely vegetated limestone quarry spoil tips and rubble. The old quarry rubble on the site provides excellent summer hiding places and winter hibernation sites for the newts, and also attracts invertebrates on which they feed. There are other smaller ponds within the surrounding agricultural land which support small numbers of great crested newts, but they are not significant enough to include within this site. Water levels in all the ponds except pond 1 can fluctuate, sometimes leading to some breeding ponds drying out, resulting, in relatively little aquatic vegetation in some of the 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 2017, 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. *Triturus cristatus* Great crested newt

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure and function	**Overall Habitat Suitability Index score**	Restore overall Great Crested Newt Habitat Suitability Index score to no less than 0.8.	The Habitat Suitability Index provides a measure of evaluating habitat quality and quantity for Great Crested Newts. The Index score lies between 0 and 1, with 1 representing optimal GCN 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.	UK AMPHIBIAN AND REPTILE GROUPS (ARG-UK) Advice Note 5 on the Habitat Suitability Index May 2010) Aerial photographs 2005, 2008, 2014 (held by Natural England) NATURAL ENGLAND, 2015. Clints Quarry habitat map 2015 BENTLEY D. 2001 *Ecological Survey and Management Plan of Clints Quarry SSSI Moota Allerdale Cumbria.* Report to Natural England
	Presence of ponds	Maintain the 3 main breeding ponds and maintain up to 13 smaller more temporary ponds. Maintain the presence of any ponds in adjacent farmland known to support great crested newts and would be part of the same meta-population.	The water levels of the site should be maintained or improved. A significant and long term lowering of the water table would lead to irrevocable deterioration of the site for great crested newts. 'Ponds' include both 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.	Aerial photographs 2005, 2008, 2014 (held by Natural England) BENTLEY D. 2001 *Ecological Survey and Management Plan of Clints Quarry SSSI Moota Allerdale Cumbria*. Report to Natural England NATURAL ENGLAND, 2015. Clints Quarry habitat map 2015
	Permanence of ponds	Restore the permanence of the three breeding ponds. Two of the three	Ponds include both breeding and non-breeding ponds, since the latter may be used for foraging or sustaining prey populations.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		breeding ponds should hold water at any one time with minimum summer water depth 20cm. Ensure that smaller, temporary ponds are maintained within the site.	Ponds should have a high degree of permanence (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. Two of the three ponds dry out more frequently.	This attribute will be periodically monitored as part of Natural England's site condition assessments.
	Cover of macrophytes	Maintain or restore a high cover of macrophytes, typically between 25-100% of margin covered by marginal and emergent species and 25 -75 of pond bottom/midwater/surface covered by submerged or floating species.	The cover of macrophytes (aquatic plants that grows in or near water and is either emergent, submergent, or floating) is related to pond permanence resulting in the less permanent breeding ponds lacking macrophytes 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,* float/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.	
Supporting habitat: structure and function	**Supporting terrestrial habitat**	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 tussock-rich 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, diches, stone walls, old farm buildings, loose stone/rocks, rabbit burrows and small mammal holes. Good habitat provides a range of invertebrates, such as	Aerial photographs 2005, 2008, 2014 (held by Natural England) BENTLEY D. 2001 *Ecological Survey and Management Plan of Clints Quarry SSSI Moota Allerdale Cumbria.* Report to Natural England

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			earthworms, insects, spiders and slugs, on which newts are known to feed. Fragmentation refers to significant barriers to newt 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	NATURAL ENGLAND, 2015. Clints Quarry habitat map 2015 This attribute will be periodically monitored as part of Natural England's site condition assessments.
	Shading of ponds	Ensure pond perimeters are generally free of shade (< 25% of breeding ponds having > 20% of southern margin solidly shaded).	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.	
	Presence of fish and wildfowl	Ensure that fish and wildfowl are absent from all ponds within the SAC.	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 pond water conditions. Some may also actively hunt adult newts and their larvae. Similarly fish can be significant predators of newt larvae. The presence of waterfowl and fish can reduce habitat suitability. These should be wholly absent form sites which support fewer than 5 ponds.	This attribute will be periodically monitored as part of Natural England's site condition assessments.
Supporting habitat: structure and function	**Soils, substrate and nutrient cycling**	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal/bacterial ratio, within typical values for the supporting habitat	Soil supports basic ecosystem function and is a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with the supporting habitat of this Annex II feature.	This attribute will be periodically monitored as part of Natural England's site condition assessments.
Population (of the feature)	**Population abundance**	Restore the abundance of the great crested newt population to a level which is at least 20% of the count for 4 consecutive years.	This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of	JNCC, 2004. Natura 2000 Standard Data Form NATURAL ENGLAND, 2002. Clints Quarry Great Crested Newt Records 1992-2001". Natural England hold later monitoring records to 2017.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			natural factors or management measures and has been stable at or above a new level over a considerable period. 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 newt 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. At this SAC, the population based on the last 4 consecutive counts, compared to previous counts appears to be declining. Estimating the average size of the Great crested newt 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.	
Population (of the feature)	**Population viability**	Restore the presence of great crested newt eggs/juvenile eggs to all three breeding ponds	A "breeding pond" is defined as a pond in which egg-laying and successful metamorphosis (i.e. 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	NATURAL ENGLAND, 2002. Clints Quarry Great Crested Newt Records 1992-2001". Natural

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			component. However it is difficult to see and record eggs so observing females egg laying or juveniles in or close to a breeding pond is an indication of viability.	England hold later monitoring records to 2017
	Supporting metapopulation	Maintain the connectivity of the SAC's great crested newt population with any associated populations (either within or outside of the SAC boundary)	Great crested newts often exist in meta-populations. A meta-population is a 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 meta-population associated with a SAC may occur outside of the designated site boundary. The connectivity of the wider local landscape to the SAC may therefore be important as this may help to ensure the survival of the overall population should sub-populations be temporarily affected by, for example, pond desiccation or fish introductions. At this SAC, there are ponds situated in adjacent farmland that may support great crested newts and would be part of the same meta-population as those present within the SAC.	Aerial photographs 2005, 2008, 2014 (held by Natural England)
Supporting habitat: extent and distribution	**Distribution of supporting habitat**	Maintain the distribution and continuity of the feature's supporting habitat, including; - Old quarry rubble which provides excellent summer hiding places and winter hibernation sites for newts. - Rough grassland, scrub and voids in the substrate which provide refuges that are shaded and capable of	A contraction in the range, or geographic spread, of the feature (and its component vegetation) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for this feature and this may affect its viability. There should be no barriers to newt movement within the site compared to that at designation	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)
		retaining moisture. .		
Supporting habitat: extent and distribution	**Extent of supporting habitat**	Maintain the total extent of the habitats which support Great crested newt at 12.03ha as described above.	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. There should be no significant loss of area or fragmentation of the site.	Aerial photographs 2005, 2008, 2014 (held by Natural England) NATURAL ENGLAND, 2015. Clints Quarry habitat map 2015 BENTLEY D. 2001 *Ecological Survey and Management Plan of Clints Quarry SSSI Moota* Allerdale Cumbria. Report to Natural England This attribute will be periodically monitored as part of Natural England's site condition assessments.
Supporting processes (on which the feature and/or its supporting habitat 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 and its supporting habitats.	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, site management strategies or plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.	NATURAL ENGLAND, 2014.Site Improvement Plan - Clints Quarry SAC (SIP046). Available from http://publications.naturalengland.org.uk/publication/6209272232804352 ENGLISH NATURE, 2005. Views about management of Clints Quarry SSSI Moota Available at: https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000146&Site

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature and/or its supporting habitat relies)	**Adaptation and resilience**	Restore the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site	This recognises the increasing likelihood of supporting habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. Such environmental changes may include changes in 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 *moderate*, taking into account the sensitivity, fragmentation, topography and management of its habitats/supporting 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. At this SAC, suitable ponds and supporting habitat need to be created and maintained outside the quarry to reduce habitat fragmentation.	NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments (NBCCVAs) assessments for SACs and SPAs in England. Available at http://publications.naturalengland.org.uk/publication/4954594591375360
Supporting processes (on which the feature and/or its supporting habitat relies)	**Air quality**	Maintain or where necessary restore concentrations and deposition of air pollutants within the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System www.apis.ac.uk	The supporting habitat of this feature is considered sensitive to changes in air quality. Exceedance of critical values for air pollutants may modify the chemical status of the habitat's substrate, accelerating or damaging plant growth, altering its vegetation structure and composition (including food-plants) and reducing supporting habitat quality and population viability of this feature. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System www.apis.ac.uk

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			levels for ammonia (NH3), oxides of nitrogen (NOx) and sulphur dioxide (SO2), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.	
Supporting processes (on which the feature or its supporting habitat relies)	**Water quality**	Maintain a suitably high quality of water within the ponds on site as indicated by; - The presence of an abundant and diverse invertebrate community. - Phosphorus levels should be below 0.12mg/l PO_4-P. - Nitrogen levels less than 2.0mg/l TON - Conductivity < 850µS/cm - pH neutral to slightly alkaline	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 GCN larvae and adults. Additional water quality measurement used to derive HIS water quality suitability indices taken from the 2010 Countryside Survey Ponds Report from 2007. Maintain 0% cover of arable land within the SAC and avoid external inflows into the site (the wetland and ponds are dependent on rainfall.)	These attribute will be periodically monitored as part of Natural England's site condition assessments. WILLIAMS, P.J., BIGGS, J., CROWE, A., MURPHY, J., NICOLET, P., WEATHERBY, A. & DUNBAR, M. 2010. Countryside Survey Ponds Report from 2007. CS Technical Report No. 7/07. Centre for Ecology & Hydrology.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Version Control Advice last updated: not applicable				
Variations from national feature-framework of integrity-guidance: not applicable				