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

Rochdale Canal Special Area of Conservation (SAC) UK0030266

Image take from Canal and Rivers Trust

Date of Publication: 25 January 2019

About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Rochdale Canal 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	Rochdale Canal Special Area of Conservation (SAC)
Location	Greater Manchester
Site Map	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	*25.55ha*
Designation Changes	*N/A*
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)	*Rochdale Canal SSSI*
Relationship with other European or International Site designations	N/A

Site background and geography

Situated within the Greater Manchester area, the Rochdale Canal contains important habitats for submerged aquatic plants and emergent vegetation, including extensive colonies of the nationally scarce floating water-plantain *Luronium natans*. The site also supports a diverse assemblage of aquatic flora, in particular nine species of pondweed *Potomogeton* spp. The plant communities found in the Rochdale Canal are characteristic of mesotrophic water bodies, i.e. those which are moderately nutrient-rich.

Opened in 1804, the Rochdale Canal became the first of Manchester's three trans-Pennine canals and principal cargoes included coal, agricultural produce and materials for the textiles industry (Canal & River Trust, ND).

The canal is situated within the Manchester conurbation National Character Area (NCA) which is a predominantly urban area, bringing together a number of large settlements. The Manchester Pennine Fringe NCA wraps around the conurbation to the east and to the north. The Mersey Valley NCA lies to the west of the area, while the Shropshire, Cheshire and Staffordshire Plain NCA extends to the south. The high-rise buildings of Manchester city centre serve as a visual orientation point within the surrounding urban context, and can be seen from many viewpoints in the conurbation and in surrounding NCAs. Further information on this NCA can be found 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:

- **S1831 Floating water-plantain *Luronium natans***

Floating water-plantain *Luronium natans* occurs in a range of freshwater situations, including nutrient-poor lakes in the uplands, slowly-flowing lowland rivers, pools, ditches and canals that are moderately nutrient-rich. The floating water-plantain is an aquatic plant endemic to Europe. It has a complex life history and ecology and is notoriously difficult to identify. Rochdale Canal supports a significant population of floating water-plantain *Luronium natans* in a botanically diverse water-plant community. This population of *Luronium* is representative of the formerly more widespread canal populations of north-west England.

Luronium natans occurs as two forms: in shallow water with floating oval leaves, and in deep water with submerged rosettes of narrow leaves. The plant thrives best in open situations with a moderate degree of disturbance, where the growth of emergent vegetation is held in check. Populations fluctuate greatly in size, often increasing when water levels drop to expose the bottom of the water body. Populations fluctuate from year to year, and at many sites records of *L. natans* have been infrequent, suggesting that only small populations occur, in some cases possibly as transitory colonists of the habitat. Populations tend to be more stable at natural sites than artificial ones, but approximately half of recent (post-1980) records are from canals and similar artificial habitats. Its habitat in rivers has been greatly reduced by channel-straightening, dredging and pollution, especially in lowland situations.

Table 1: Supplementary Advice for Qualifying Features: S1831. *Luronium natans*; Floating water-plantain

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	**Population abundance**	Maintain the abundance of the population where there is no decline >50 % in cover of *Luronium natans* within an occupied habitat area and within occupied habitat areas >2/3 of site open water cover provided by *Luronium natans*, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (generally at least 10 years). The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature. Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment. Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise that the figures	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			stated are the best available. Many annual species undergo significant population fluctuations, unless there are fewer than 100 individuals (when an individual count is generally possible) counting is not going to be simple, partly as it is difficult to define functional individuals with a stoloniferous plant producing many plantlets. Discrete populations of *L. natans* must be greater than 50 m apart. Many habitats where L. natans is present may be subject to periodic major disturbance events and these may be important in enabling populations to persist at a site. Thus, there may naturally be considerable fluctuations in population size at a given site between monitoring visits and so only major fluctuations should be noted.	
Supporting habitat: extent and distribution	**Distribution of supporting habitat**	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for this feature and this may affect its viability.	
Supporting habitat: extent and distribution	**Extent of supporting habitat**	Maintain] the total extent of the habitats which support the feature to: 25.7ha of canal	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.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/	**Habitat structure**	Ensure the supporting water bodies are sufficiently free of other competing vegetation to	Luronium is intolerant of competition and occurs in a range of freshwater habitats – oligotrophic and mesotrophic lakes, slow flowing rivers and associated floodplain pools and small pools	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
function		allow space for this early successional species to thrive.	in heathland. There are also large populations in a number of disused or recently restored canals.	
Supporting habitat: structure/ function	**Substrate**	Maintain a habitat substrate characterised by cohesive sediments which are not too coarse In areas of *L. natans*: Sediments cohesive and not coarser than 50/50 silt/sand.	Fine unconsolidated sediments are an unsuitable rooting medium and plants may be subject to uprooting. Conversely, where sediment is too coarse and mineral there may be scouring and poor root anchorage. Soft mineral sediments may support diverse vegetation provided boat traffic is low or absent. When boat traffic increases, fine unconsolidated sediments are an unsuitable rooting medium and plants may be subject to uprooting. Furthermore, under high boat traffic levels fine sediments are readily re-suspended leading to high turbidity levels and smothering of plant surfaces. Large quantities of leaf litter may lead to highly anoxic conditions unsuitable for plants and other organisms. Actual sediments are dependent on input of suspended solids in canal water supply, erosion within the canal and navigational requirements.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/ function	**Vegetation composition: invasive non-native species**	Ensure the following invasive non-native species are absent from the site or being contained at a level which does not significantly affect the feature; *Crassula helmsii, Hydrocotyle ranunculoides, Myriophyllum aquaticum, Azolla filiculoides*,	These alien plant species are highly competitive and will impact negatively on Luronium, which is not competitive. Other introduced species may have effects on ecosystem functioning through the food web or via direct effects on the plant community, e.g. artificially large waterfowl populations or non-native crayfish species. *Luronium natans* is particularly sensitive to competition from other species. Whilst competitive interactions are very difficult to measure, a simple judgement on the height of associated vegetation can give an indication of the likelihood of competitive exclusion. Other introduced species may have effects on ecosystem functioning through the food web or via direct effects on the plant community, e.g. large waterfowl populations or non-native crayfish species. Further negative indicators which should cause concern if present are bottom-feeding fish.	Natural England (2012), Rochdale Canal Favourable Condition Table. Data may be available from Natural England upon request Lansdown & Wade (2003)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/ function	**Vegetation structure**	Ensure supporting habitat is free of shade or competitive vegetation; taller species associated with *Luronium* patches should be no more than occasional.	Excessive overhanging vegetation both results in shading of aquatic vegetation and large inputs of organic matter in the form of leaf litter. Over-shading and leaf drop from developing bank-side trees denies opportunity for Floating water plantain to establish on large and growing sections of the canal. Bankside tree removal is often required to reduce shading effects and leaf litter input.	Natural England (2014), Site Improvement Plan
Supporting habitat: structure/ function	**Water clarity**	Maintain a high degree of water clarity, typically the canal bed should be clearly visible in water 1m deep in summer (where depth of canal allows).	Elevated turbidity levels as a result of, for example, high boat traffic densities, high phytoplankton densities, or the presence of benthic-feeding fish will have adverse impacts on submerged plant communities. Although *Luronium* may occur in naturally dystrophic waters with humic staining, this may be exacerbated by acidification, reducing water clarity further.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/ function	**Water levels/ hydrology**	Maintain water levels which are sufficient to maintain or restore populations; iIn shallow pools natural fluctuations in water level should be allowed to occur. There should be no drop in overall depth of more than 10% throughout the canal and water level fluctuations minimised during April to October	In shallow pools and similar sites plants often flower and fruit on draw-down zones as summer water levels recede. These processes should not be artificially interrupted, but will vary greatly from year to year depending on weather. Canals have small flows of water due to leakage and boat movements through locks. These flows can be essential elements in maintaining good water quality. Consistently low water levels may stress emergent and aquatic vegetation. High levels of lock usage on navigated canals can result in large fluctuations in water levels and associated scouring of bed sediments and aquatic vegetation.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/ function	**Water quality/ quantity**	Maintain water quality and quantity to a standard which provides the necessary conditions to support the feature	For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year during key stages of their life cycle. Poor water quality and inadequate quantities of water can adversely affect the availability and suitability of breeding, rearing and feeding habitats. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Directive (WFD 2000/60/EC) will also be sufficient to support the SAC Conservation Objectives but in some cases more stringent standards may be needed to support the SAC feature. Further site-specific investigations may be required to establish appropriate standards for the SAC. L.uronium populations are present across a wide range of habitats with a corresponding range of water chemistry. This suggests that its tolerances to most water chemistry parameters are not especially demanding although links between presence/persistence and water quality are not yet understood. As such the water quality targets set out for freshwater habitats should be sufficient to protect populations from adverse impacts.	
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	The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being high, taking into account the sensitivity, fragmentation, topography and management of this habitat. This means that this site is considered to be the most vulnerable sites overall and are likely to require the most adaptation action, most urgently. A site based assessment should be carried out as a priority. This means that action to address specific issues is likely. 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.	NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at http://publications.naturalengland.org.uk/publication/4954594591375360].
Supporting processes (on which the feature and/or its supporting habitat 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).	The supporting habitat of this feature is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition (including food-plants) and reducing supporting habitat quality and population viability of this feature. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH3), oxides of nitrogen (NOx) and sulphur dioxide (SO2), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a	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 (2014), Site Improvement Plan

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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 and/or its supporting habitat relies)	**Conservation measures**	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature and/or its supporting habitats.	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, site management strategies or plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.	English Nature (2004), Views About Management Natural England (2014), Site Improvement Plan
Supporting processes (on which the feature and/or its supporting habitat relies)	**Disturbance from human activity**	The duration, intensity and/or frequency of disturbance events should not affect the environmental conditions necessary to support the feature	The loss or reduction in the disturbance regime (for example, grazing, water-level fluctuations, flood scouring, dredging and boat traffic) that would normally arrest succession is particularly significant.	
Supporting processes (on which the feature and/or its supporting habitat relies)	**Regeneration**	Maintain the regenerative ability of the population, indicated by a range of different plant sizes being present.	This implies effective ageing and recruitment of plants.	
Supporting processes (on which the feature and/or its supporting habitat relies)	**Regeneration (sexual)**	Ensure that, in shallow pools, there is a sufficient number of flowering and seeding plants each year	An increase in the presence of perennial vegetative plants may be associated with prolonged wetness or site permanence. In the case of populations of annual plants in shallow pools it is important to obtain evidence of sexual reproduction. The mere presence of plants only confirms the quality of seed set from previous generations. However, the degree of seed dormancy in L. natans is unknown and repeated recruitment from the seedbank without effective replenishment will reduce the long-term stability of the population.	

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)	**Regeneration (vegetative)**	Maintain sufficient areas of shallow and still water for the development of ascending stolons bearing chains of plantlets, and for the production of floating leaves.	Canal populations are sterile clones that only reproduce vegetatively. Floating water-plantain has a number of apparently discrete reproductive strategies, annual flowering, perennial flowering, and perennial vegetative. It also occurs in dynamic metapopulations that contain different populations with different reproductive strategies. Any monitoring or conservation programme that does not take account of the dynamics of metapopulations and the requirements of the different reproductive strategies will not adequately represent the requirements of the species. Monitoring will provide a means by which data can be fed back into the system to refine conservation action. Further research is needed to explain the ecological requirements of some populations.	Lansdown & Wade (2003)
Supporting processes (on which the feature and/or its supporting habitat relies)	**Water quantity/ quality**	Where the feature or its supporting habitat is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature	For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed to reflect the ecological needs of the species feature. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.	
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: Attribute relating to soils and nutrients have been removed as not considered relative to this feature.				

References

Canal and River Trust (ND), Rochdale Canal. Available From: https://canalrivertrust.org.uk/enjoy-the-waterways/canal-and-river-network/rochdale-canal?gclid=CjwKCAjworfdBRA7EiwAKX9HeKffxQ0s03NVxRSMdIjiai5urptR1jgk4UNUNgPDGs1H6MqIh7epThoCadYQAvD_BwE

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Natural England (2014), Site Improvement Plan, Rochdale Canal SAC. Available from: http://publications.naturalengland.org.uk/publication/6227629417955328