

## European designated sites - Special Areas of Conservation (SAC)

### Cannock Extension Canal

- Site map
- JNCC site summary description
- Natura2000 data form
- Citation for SAC
- Site conservation objectives – Key principles
- Site conservation objectives - Supplementary advice document
- Site improvement plan

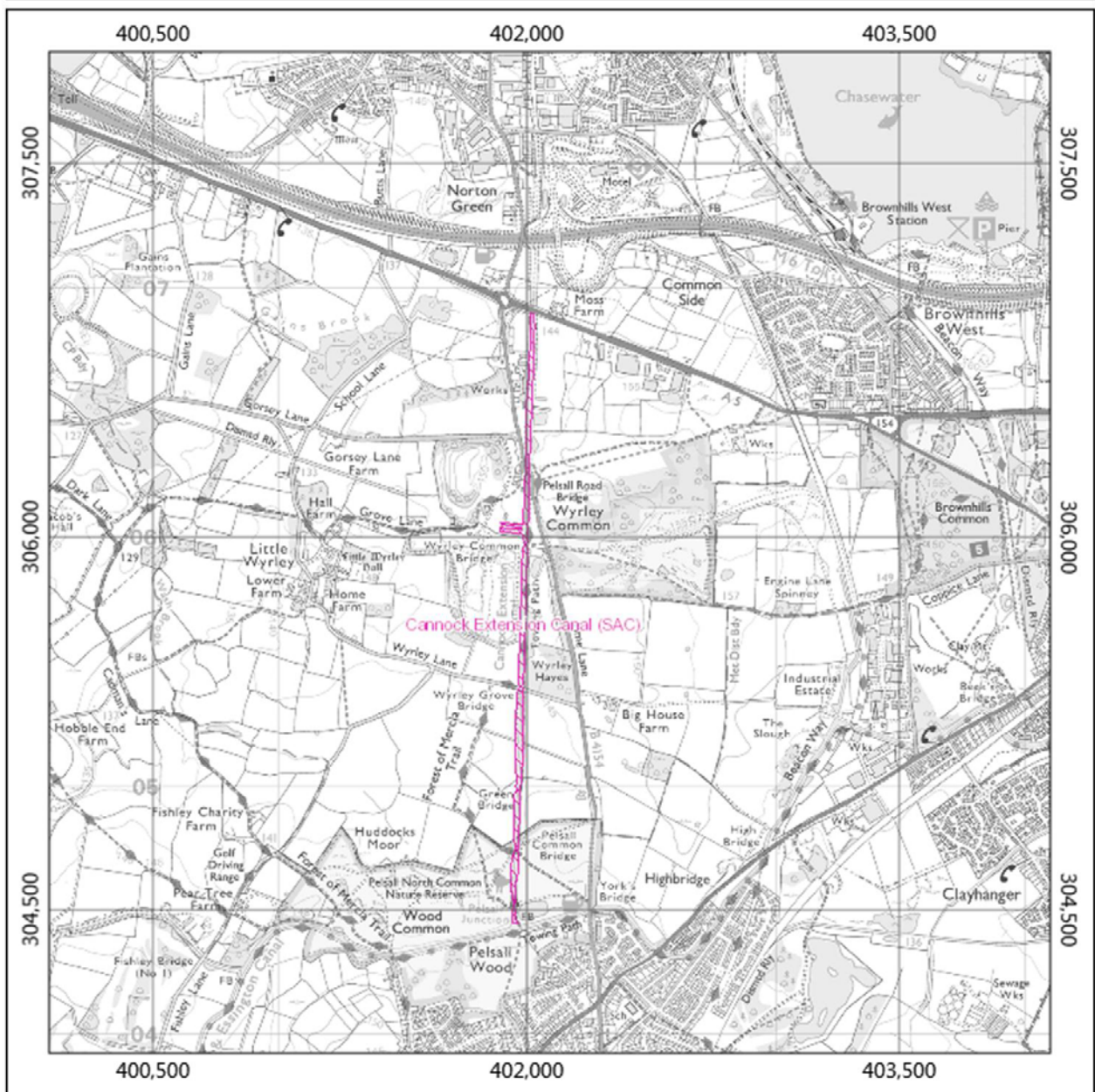
### Cannock Chase

- Site map
- JNCC site summary description
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- Site conservation objectives – Key principles
- Site conservation objectives - Supplementary advice document
- Site improvement plan
- National Character Area profile – Cannock Chase and Cank Wood



### Mottey Meadows

- Site map
- JNCC site summary description
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- Citation for SAC
- Site conservation objectives – Key principles
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- Site improvement plan

## Cannock Extension Canal SAC



### Key

-  Special Areas of Conservation England © Natural England
-  Ordnance Survey (Greyscale) © Ordnance Survey



Map Produced from WebMap2 on 24/10/18

Map Projection: British National Grid

Map Scale at A4: 1:23,189

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# Cannock Extension Canal

## Site details



Location of Cannock Extension Canal SAC/SCI/cSAC

<b>Country</b>	England
<b>Unitary Authority</b>	Shropshire and Staffordshire, West Midlands
<b>Centroid*</b>	SK020058
<b>Latitude</b>	52.64972222
<b>Longitude</b>	-1.970555556
<b>SAC EU code</b>	UK0012672
<b>Status</b>	Designated Special Area of Conservation (SAC)
<b>Area (ha)</b>	5

\* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

## General site character

Inland water bodies (Standing water, Running water) (75%)

Humid grassland, Mesophile grassland (10%)

Broad-leaved deciduous woodland (4.9%)

Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites) (10.1%)

[Natura 2000 standard data form](#) for this site as submitted to Europe (PDF, < 100kb).

[Interactive map](#) from MAGIC (Multi-Agency Geographic Information for the Countryside).

### Note:

When undertaking an appropriate assessment of impacts at a site, **all** features of European importance (both primary and non-primary) need to be considered.

## Annex I habitats that are a primary reason for selection of this site

Not applicable

## Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

Not applicable.

## Annex II species that are a primary reason for selection of this site

**1831** [Floating water-plantain](#) *Luronium natans*

Cannock Extension Canal in central England is an example of anthropogenic, lowland habitat supporting **floating water-plantain** *Luronium natans* at the eastern limit of the plant's natural distribution in England. A very large population of the species occurs in the Canal, which has a diverse aquatic flora and rich dragonfly fauna, indicative of good water quality. The low volume of boat traffic on this terminal branch of the Wyrley and Essington Canal has allowed open-water plants, including floating water-plantain, to flourish, while depressing the growth of emergents.

## Annex II species present as a qualifying feature, but not a primary reason for site selection

Not applicable.

*Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.*



# NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),  
Proposed Sites for Community Importance (pSCI),  
Sites of Community Importance (SCI) and  
for Special Areas of Conservation (SAC)

SITE UK0012672  
SITENAME Cannock Extension Canal

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- [1. SITE IDENTIFICATION](#)
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- [6. SITE MANAGEMENT](#)

## 1. SITE IDENTIFICATION

<b>1.1 Type</b> B	<b>1.2 Site code</b> UK0012672	<a href="#">Back to top</a>
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### 1.3 Site name

Cannock Extension Canal

<b>1.4 First Compilation date</b> 1995-06	<b>1.5 Update date</b> 2015-12
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### 1.6 Respondent:

**Name/Organisation:** Joint Nature Conservation Committee  
**Address:** Joint Nature Conservation Committee Monkstone House City Road Peterborough  
PE1 1JY  
**Email:**

**Date site proposed as SCI:** 1995-06  
**Date site confirmed as SCI:** 2004-12  
**Date site designated as SAC:** 2005-04

**National legal reference of SAC designation:**

Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010  
(<http://www.legislation.gov.uk/uksi/2010/490/contents/made>).

## 2. SITE LOCATION

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## 2.1 Site-centre location [decimal degrees]:

### Longitude

-1.970555556

### Latitude

52.64972222

## 2.2 Area [ha]:

5.0

## 2.3 Marine area [%]

0.0

## 2.4 Sitelength [km]:

0.0

## 2.5 Administrative region code and name

### NUTS level 2 code

### Region Name

UKG2	Shropshire and Staffordshire
UKG3	West Midlands

## 2.6 Biogeographical Region(s)

Atlantic (100.0  
%)

## 3. ECOLOGICAL INFORMATION

### 3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

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Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
P	1831	<a href="#">Luronium natans</a>			p				C	DD	C	B	B	B

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

## 4. SITE DESCRIPTION

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### 4.1 General site character

Habitat class	% Cover
N16	4.9
N06	75.0
N10	10.0
N23	10.1
<b>Total Habitat Cover</b>	<b>100</b>

### Other Site Characteristics

2 Terrestrial: Geomorphology and landscape: lowland

### 4.2 Quality and importance

Luronium natans for which this is considered to be one of the best areas in the United Kingdom.

### 4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	H02		B
H	I01		B
H	H04		B
H	A04		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

### 4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): [http://jncc.defra.gov.uk/pdf/Natura2000\\_StandardDataForm\\_UKApproach\\_Dec2015.pdf](http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf)

<http://publications.naturalengland.org.uk/category/6490068894089216>

<http://publications.naturalengland.org.uk/category/3212324>

## 5. SITE PROTECTION STATUS (optional)

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### 5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

## 6. SITE MANAGEMENT

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### 6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

### 6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/> Yes
<input type="checkbox"/> No, but in preparation
<input checked="" type="checkbox"/> No

### 6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.



## EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the [official European Union guidelines for the Standard Data Form](#). The relevant page is shown in the table below.

### 1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

### 3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

### 3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards ( <i>Spartinion maritimae</i> )	57
1330	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> )	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs ( <i>Sarcocornetea fruticosi</i> )	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with <i>Empetrum nigrum</i>	57
2150	Atlantic decalcified fixed dunes ( <i>Calluno-Ulicetea</i> )	57
2160	Dunes with <i>Hippophila rhamnoides</i>	57
2170	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> ( <i>Salicion arenariae</i> )	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with <i>Juniperus</i> spp.	57
2330	Inland dunes with open <i>Corynephorus</i> and <i>Agrostis</i> grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> )	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i>	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	57
3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion roburi-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

### 3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

### 3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

### 3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

### 3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

### 3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

### 3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

### 3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

### 3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

#### 4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Scree, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

#### 4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc.), trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

### 5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

**Name:** Cannock Extension Canal  
**Unitary Authority/County:** Walsall, Staffordshire  
**SAC status:** Designated on 1 April 2005  
**Grid reference:** SK020058  
**SAC EU code:** UK0012672  
**Area (ha):** 5.47  
**Component SSSI:** Cannock Extension Canal SSSI

### Site description:

Cannock Extension Canal in central England is an example of anthropogenic, lowland habitat supporting floating water-plantain *Luronium natans* at the eastern limit of the plant's natural distribution in England. A very large population of the species occurs in the Canal, which has a diverse aquatic flora and rich dragonfly fauna, indicative of good water quality. The low volume of boat traffic on this terminal branch of the Wyrley and Essington Canal has allowed open-water plants, including floating water-plantain, to flourish, while depressing the growth of emergents.

**Qualifying species:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Floating water-plantain *Luronium natans*

This citation relates to a site entered in the Register of European Sites for Great Britain.

Register reference number: UK0012672

Date of registration: 14 June 2005

Signed

On behalf of the Secretary of State for Environment,  
Food and Rural Affairs

# European Site Conservation Objectives for Cannock Extension Canal Special Area of Conservation Site Code: UK0012672



With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;**

- **The extent and distribution of the habitats of qualifying species**
- **The structure and function of the habitats of qualifying species**
- **The supporting processes on the habitats of qualifying species rely**
- **The populations of qualifying species, and,**
- **The distribution of qualifying species within the site.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

## **Qualifying Features:**

S1831. *Luronium natans*; Floating water-plantain

## Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the “Habitats Regulations”). They must be considered when a competent authority is required to make a ‘Habitats Regulations Assessment’, including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a [Special Area of Conservation \(SAC\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term ‘favourable conservation status’ is defined in regulation 3 of the Habitats Regulations.

**Publication date:** 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.





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

**Cannock Extension Canal Special Area of Conservation (SAC)  
Site Code: UK0012672**



Photograph: Natural England.

**Date of Publication: 26 February 2018**

## **About this document**

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Cannock Extension 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. You may also find it helpful to refer to Natural England's SSSI Impact Risk Zones dataset available [here](#).

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](mailto:HDIRConservationObjectivesNE@naturalengland.org.uk)**

## About this site

### European Site information

<b>Name of European Site</b>	Cannock Extension Canal Special Area of Conservation (SAC)
<b>Location</b>	Staffordshire (SK0198205556)
<b>Site Maps</b>	The designated boundary of this site can be viewed <a href="#">here</a> on the MAGIC website
<b>Designation Date</b>	01 April 2005
<b>Qualifying Features</b>	Floating water-plantain <i>Luronium natans</i>
<b>Designation Area</b>	5.47ha
<b>Designation Changes</b>	None
<b>Feature Condition Status</b>	Details of the feature condition assessments made at this site can be found using Natural England's <a href="#">Designated Sites System</a>
<b>Names of component Sites of Special Scientific Interest (SSSIs)</b>	Cannock Extension Canal SSSI
<b>Relationship with other European or International Site designations</b>	None
<b>Other information</b> <input type="checkbox"/>	<a href="#">Natura 2000 Standard Data Form</a> for Cannock Extension Canal SAC

### Site background and geography

The Cannock Extension Canal in central England is an example of anthropogenic, lowland habitat supporting floating water-plantain *Luronium natans* at the eastern limit of the plant's natural distribution on England.

The Cannock Extension Canal was dug in 1863 for transportation of coal, which was the main industry in the area at the time, and is a terminal side branch of the Wyrley and Essington Canal extending northwards for 2.5 km towards Norton Canes. It is part of the extensive inland waterway system running throughout Birmingham and the Black Country.

The canal is fed by Chasewater Reservoir SSSI that lies approximately 8km to the north-east. The high water quality of the canal is due to the wider catchment of its feeder reservoir comprising semi-natural habitat such as heathland at Cuckoo Bank. There is little intensive agriculture in the catchment so water quality is good.

The high water quality, uneven canal bottom and the low volume of boat traffic have allowed a diverse aquatic flora to develop without any extensive reed-swamp incursion. The good water quality, low in plant nutrients, prevents dominant species such as reedmace, filamentous algae and invasive alien species such as *Elodea* species from dominating.

The large population of the nationally scarce floating water-plantain *Luronium natans*, found throughout the length of the canal, often carpeting it in places, is the best known colony in both Staffordshire and the West Midlands, and is considered to be one of the best areas in the United Kingdom for the species. In addition, a total of 34 aquatic plants have been recorded from the canal, making it the richest known waterway of its type in Staffordshire and the West Midlands and placing it high within the national canal network series.

In addition, good populations exist of flowering-rush *Butomus umbellatus*, arrowhead *Sagittaria sagittifolia*, shining pondweed *Potamogeton lucens*, perfoliate pondweed *P. perfoliatus* and spiked water-milfoil *Myriophyllum spicatum*, all of which are rare or uncommon in Staffordshire. Other uncommon species present include curled pondweed *P. crispus* and narrow-leaved water-plantain *Alisma lanceolatum*.

The canal is part of the navigable canal network and is home to a number of moorees mainly at the northern end. The canal is fished but not stocked. The canal is easily accessible from the communities at Pelsall and Norton Canes.

The Cannock Extension Canal has a variety of land uses adjacent to it. At the southern end of the SAC at the junction with the main Wyrley and Essington Canal the Extension Canal cuts through Pelsall Common Local Nature Reserve for about a fifth of its length, where a mosaic of heathland, woodland, wetland and grassland protects and complements the high nature value of the canal. Moving northwards, the adjacent land use changes to arable agriculture on both sides for about half of its length to the north. Moving further north, other land uses are a restored (and sealed) refuse tip, boatyard and moorings on the offside and woodland, fishing pool and arable agriculture on the tow-path side up to the A5 trunk road at the very north of the site.

The canal's tow-path forms the eastern boundary and has a wooded boundary for most of its length. The offside is also wooded in places and the trees overhang the canal; work has been carried out to crown lift several to reduce the shade and leaf litter, which would accumulate and smother the vegetation growing on the bed of the canal, such as the floating water-plantain *Luronium natans*.

There are drains into the canal from adjacent land, including one from Wyrley Common, which contains colliery shale waste in the water, and has led to a build-up of very fine sediment in the central section of the canal, which is slow to settle out once disturbed by boat traffic.

## **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 and slowly-flowing lowland rivers, pools, ditches and canals that are moderately nutrient-rich.

Floating water-plantain *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.

Floating water-plantain *Luronium natans* can grow in two different forms; perennial vegetative populations and many perennial flowering populations of floating water-plantain *Luronium natans* occur as persistent, largely stable populations in deep water. Perennial flowering populations in naturally

meso-eutrophic habitats are likely to be dynamic and very vulnerable. Annual flowering populations of floating water-plantain *Luronium natans* occur as dynamic meta-populations, where individual populations will colonise, expand and set seed in suitable habitat and then decline and disappear due to community succession.

**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)
<b>Supporting habitat: structure /function</b>	<b>Habitat structure</b>	Ensure the supporting open water habitat is sufficiently free of other competing vegetation to allow space for floating water-plantain to thrive.	Floating water-plantain <i>Luronium natans</i> is intolerant of competition from other plants and occurs in a range of freshwater habitats – oligotrophic and mesotrophic lakes, slow-flowing rivers and associated floodplain pools and small pools in heathland. There are also large populations in a number of disused or recently restored canals.	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SAC site monitoring 2007 to 2016.</p> <p>NATURAL ENGLAND. 2014. Rapid Integrated Site Assessment for Cannock Extension Canal Units 1 and 2. Natural England.</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments.</p>
	<b>Vegetation structure</b>	Ensure supporting open water habitat is free of shade or competitive vegetation, with taller species associated with floating water-plantain <i>Luronium natans</i> patches 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.	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SAC site monitoring 2007 to 2016.</p> <p>NATURAL ENGLAND. 2014. Rapid Integrated Site Assessment for Cannock Extension Canal Units 1 and 2. Natural England.</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				monitored as part of Natural England's SSSI condition assessments.
	<b>Vegetation composition: invasive non-native species</b>	<p>Ensure the following invasive non-native species are absent from the site or being contained at a level which does not cause loss of area of the floating water-plantain feature;</p> <p>New Zealand pigmyweed <i>Crassula helmsii</i>,            Floating pennywort <i>Hydrocotyle ranunculoides</i>,            Parrot feather watermilfoil <i>Myriophyllum aquaticum</i>,            Water fern <i>Azolla filiculoides</i>.</p>	<p>These alien plant species are highly competitive and will impact negatively on floating water-plantain <i>Luronium natans</i>, which is not competitive.</p> <p>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.</p>	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SAC site monitoring 2007 to 2016.</p> <p>NATURAL ENGLAND. 2014. Rapid Integrated Site Assessment for Cannock Extension Canal Units 1 and 2. Natural England.</p> <p>NATURAL ENGLAND. 2014. Site Improvement Plan: <a href="#">Cannock Extension Canal</a> (SIP036).</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments.</p>
<b>Supporting habitat: structure/function</b>	<b>Water clarity</b>	<p>Restore a high degree of water clarity throughout the whole site. Most of the canal bed should be clearly visible in summer.</p>	<p>Water clarity is an indicator of light availability for submerged plants. Elevated turbidity levels will have adverse impacts on submerged plant communities. This may be the result of, for example, suspended solids resulting from disturbance by boats, high phytoplankton densities, the presence of bottom-feeding fish and inputs of silt-laden drainage water after rain can also cause loss of clarity.</p> <p>Although floating water-plantain <i>Luronium natans</i> may occur in naturally dystrophic waters with humic staining, this may be exacerbated by acidification, reducing water clarity further.</p>	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SAC site monitoring 2007 to 2016.</p> <p>NATURAL ENGLAND. 2014. Site Improvement Plan: <a href="#">Cannock Extension Canal</a> (SIP036).</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p><b>Reason for restore:</b> 700m of the southern end of unit 1 is very turbid (between the old colliery basins and Wyrley Grove Bridge) due to a build-up over the years of very fine sediments contained in run-off from colliery shale waste on Wyrley Common. Once these very fine, unconsolidated sediments are disturbed it takes longer for the water to clear than if the sediments were coarser.</p> <p>The situation has been improving over the last few years due to mitigation works on Wyrley Common but water clarity and thus aquatic plant cover is still much poorer in this section than in the other parts of the SSSI.</p> <p>On-site conservation measures to address this issue include additional dredging and shade reduction works (from shading trees) along critical sections of the canal.</p>	This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments.
<b>Supporting habitat: structure/function</b>	<b>Water levels</b>	Maintain open water levels which are sufficient to maintain the abundance of the floating water-plantain <i>Luronium natans</i> population	<p>In shallow pools and similar sites plants often flower and fruit on draw-down zones as summer water levels recede.</p> <p>In canals floating water-plantain <i>Luronium natans</i> is very rarely exposed in this way so is unable to reproduce sexually therefore canal populations are sterile clones that can only reproduce vegetatively.</p> <p>The Cannock Extension Canal has very little flow of water due to being a cul-de-sac off a long level section of the Wyrley &amp; Essington Canal. There are no locks on either canal. There is only limited inflow from the southern end to offset leakage and evaporation.</p>	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SAC water level monitoring data.</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments using data from the Canal and River Trust's automatic level reader at Pelsall Junction.</p>
<b>Supporting habitat: structure/function</b>	<b>Water quality</b>	Restore water quality throughout the whole site at the following standards to provide the necessary conditions to	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.	<p>NATURAL ENGLAND. 2016. Cannock Extension Canal SAC water quality monitoring data.</p> <p>NATURAL ENGLAND. 2014. Site</p>



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p>support the floating water-plantain <i>Luronium natans</i> feature;</p> <p>Biochemical Oxygen Demand = level 'B'</p> <p>Dissolved Oxygen = &gt; 70%</p> <p>Total Phosphorous concentrations (annual mean) for mesotrophic canal = &lt;20µg/l</p>	<p>Poor water quality and inadequate quantities of water can adversely affect habitat(s) on which the SAC features depend. 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 SAC Conservation Objectives but in some cases more stringent standards may be needed to support the SAC feature.</p> <p>Floating water-plantain <i>Luronium natans</i> 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.</p> <p><b>Reason for restore</b> Recent water quality monitoring shows that the water quality objective is currently not being met:</p> <p>March 2015 6 spot samples= all &lt;10ug/l TP, DO not measured, BOD grade B.</p> <p>Aug 2016 3 spot samples = 50-100ug/l TP, average = 70ug/l, no other nutrient measured.</p> <p>2009: Annual monitoring, from Wyrley Grove Bridge = average TP = 40ug/l (n=36),</p> <p>Annual monitoring is required from a number of sampling locations along the canal to understand the water quality at this site.</p>	<p>Improvement Plan: <a href="#">Cannock Extension Canal</a> (SIP036).</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments.</p>
<b>Supporting habitat:</b>	<b>Substrate sediment</b>	Restore a habitat substrate that is	Fine, unconsolidated sediments are an unsuitable rooting medium and plants may be subject to uprooting. Conversely,	NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>structure /function</b>		characterised by cohesive sediments which are not too coarse or too fine.	<p>where sediment is too coarse and mineral there may be scouring and poor root anchorage.</p> <p><b>Reason for restore:</b> 700m of the southern end of unit 1 is very turbid (between the old colliery basins and Wyrley Grove Bridge) due to a build-up over the years of very fine sediments contained in run-off from colliery shale waste on Wyrley Common. Once these very fine, unconsolidated sediments are disturbed it takes longer for the water to clear than if the sediments were coarser.</p> <p>The situation has been improving over the last few years due to mitigation works on Wyrley Common but the very fine sediments in this area make this section much poorer than in other parts of the SSSI.</p> <p>On-site conservation measures to address this issue include additional dredging and shade reduction works (from shading trees) along critical sections of the canal.</p>	<p>Favourable Condition. Available from Natural England.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments.</p>
<b>Supporting processes (on which the feature and/or its supporting habitat relies)</b>	<b>Disturbance of habitat by human activity</b>	Ensure the duration, intensity and/or the frequency of disturbance events remain at levels that are necessary to support the feature.	<p>Floating water-plantain <i>Luronium natans</i> is sensitive to competition for light and nutrients from other plant species. The loss or reduction in the disturbance regime that would normally arrest succession is particularly significant.</p> <p>In canals the disturbance regime is related to dredging (removal of sediments) and boat traffic.</p> <p>Species-richness of the canal as a whole depends not only on water quality but also on the intensity of boat traffic and channel management. In the absence of management unused and derelict canals become overgrown with emergent vegetation and lose the open water element of their flora. Heavily used canals lose much of their submerged and floating-leaved vegetation because the water column becomes turbid and plants are chewed up by propellers and uprooted by the passage of boats. Dredging is an important management tool to increase the distance between boats and the bottom of the canal bed/silt.</p>	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SAC boat counter monitoring data.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments using data from the Canal and River Trust's boat counter on the canal.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>Boat movement and dredging are key management tools for this site, both by stopping succession of more dominant plants and by occasional disturbance events to the canal banks that can create colonisation opportunities for the features of interest.</p> <p>Annual boat traffic movements are currently to be confirmed for the Cannock Extension Canal.</p> <p>The Canal and River Trust dredge the Cannock Extension Canal as part of their national dredging programme with additional dredging works, as identified by recent survey, being undertaken as one of the conservation measures for the site.</p>	
<b>Supporting processes (on which the feature and/or its supporting habitat relies)</b>	<b>Regeneration potential (vegetative)</b>	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.	<p>Canal populations are sterile clones that only reproduce vegetatively.</p> <p>Perennial populations of floating water-plantain <i>Luronium natans</i> should exhibit a range of different plant sizes</p>	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SAC site monitoring 2007 to 2016.</p> <p>NATURAL ENGLAND. 2014. Rapid Integrated Site Assessment for Cannock Extension Canal Units 1 and 2. Natural England.</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments.</p>
<b>Population (of the feature)</b>	<b>Population abundance</b>	Restore the abundance of the floating water-plantain <i>Luronium natans</i> , with individual plants always occurring frequently throughout	<p>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.</p> <p>Due to the dynamic nature of population change, the target-</p>	<p>CANAL AND RIVER TRUST. 2016. Cannock Extension Canal SSSI site monitoring 2007 to 2016.</p> <p>NATURAL ENGLAND. 2014. Rapid Integrated Site Assessment for Cannock</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p>the SAC, and avoid deterioration from its current level as indicated by the latest mean peak count or equivalent.</p>	<p>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. 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.</p> <p>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.</p> <p>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.</p> <p>In 1993 when the canal was notified as a SSSI floating water-plantain <i>Luronium natans</i> was abundant throughout much of the canal apart from the northern section from the old colliery basins to the A5 where it was less extensive. Assessment in 2017 found that floating water-plantain <i>Luronium natans</i> is</p>	<p>Extension Canal Units 1 and 2. Natural England.</p> <p>NATURAL ENGLAND. 2012. Cannock Extension Canal SSSI Definitions of Favourable Condition. Available from Natural England.</p> <p>UNIVERSITY OF HERFORDSHIRE. 1999. Survey of key sites within West Midland Meres and Mosses Natural Area for <i>Luronium natans</i>. Report to English Nature.</p> <p>ENGLISH NATURE. 1993. SSSI Notification documents.</p> <p>NATURE CONSERVANCY COUNCIL. 1989. Site survey.</p> <p>This attribute will be regularly monitored through the Canal and River Trust's annual site survey and periodically monitored as part of Natural England's SSSI condition assessments.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			present throughout much of the site, from Pelsall Junction to the A5, abundant over circa 50% of the canal where it forms extensive carpets over the bed. Over a further circa 15% of the canal it is present but less dominant, and through the central section of the canal it is slowly recolonizing.	
<b>Supporting processes (on which the feature and/or its supporting habitat relies)</b>	<b>Conservation measures</b>	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.	<p>Active and ongoing conservation management is needed to restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England.</p> <p>This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, site management strategies or plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.</p>	<p>ENGLISH NATURE, 2005. Views about the management of Cannock Extension Canal SSSI.</p> <p>NATURAL ENGLAND. 2014. Site Improvement Plan: <u>Cannock Extension Canal</u> (SIP036).</p>
<b>Supporting processes (on which the feature and/or its supporting habitat relies)</b>	<b>Adaptation and resilience</b>	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	<p>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.</p> <p>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.</p> <p>The overall vulnerability of this particular SAC to climate change has been assessed by Natural England as being high,</p>	<p>NATURAL ENGLAND (2015). Climate Change Theme Plan and supporting NBCCV Assessments for SACs and SPAs at <a href="http://publications.naturalengland.org.uk/publication/4954594591375360">http://publications.naturalengland.org.uk/publication/4954594591375360</a></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			taking into account the sensitivity, fragmentation, topography and management of its habitats/supporting habitats. This means that this site is considered to be among the most vulnerable sites overall and are likely to require the most adaptation action, most urgently, 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.	
<b>Supporting processes (on which the feature relies)</b>	<b>Air quality</b>	Restore as necessary the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for these features of the site on the Air Pollution Information System ( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ).	<p>This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it.</p> <p>Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH<sub>3</sub>), oxides of nitrogen (NO<sub>x</sub>) and sulphur dioxide (SO<sub>2</sub>), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p> <p>The critical load for nitrogen is currently being exceeded at this site.</p>	<p>More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (<a href="http://www.apis.ac.uk">www.apis.ac.uk</a>).</p> <p>NATURAL ENGLAND. 2014. Site Improvement Plan: <a href="#">Cannock Extension Canal</a> (SIP036).</p>

Attributes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Version Control</b> Advice last updated: N/A			
<b>Variations from national feature-framework of integrity-guidance:</b> <ul style="list-style-type: none"> <li>• Attribute relating to 'recruitment of plants' has been deleted as the population in the Cannock Extension Canal SAC reproduces vegetatively.</li> <li>• The text in the Supporting and Explanatory Notes for the following sections have been amended and added to: Water clarity, Water level, Water quality, Disturbance and Adaption and Resilience.</li> </ul>			





# Site Improvement Plan

## Cannock Extension Canal

Site Improvement Plans (SIPs) have been developed for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA). This work has been financially supported by LIFE, a financial instrument of the European Community.

The plan provides a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features. It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance.

The SIP consists of three parts: a Summary table, which sets out the priority Issues and Measures; a detailed Actions table, which sets out who needs to do what, when and how much it is estimated to cost; and a set of tables containing contextual information and links.

Once this current programme ends, it is anticipated that Natural England and others, working with landowners and managers, will all play a role in delivering the priority measures to improve the condition of the features on these sites.

The SIPs are based on Natural England's current evidence and knowledge. The SIPs are not legal documents, they are live documents that will be updated to reflect changes in our evidence/knowledge and as actions get underway. The information in the SIPs will be used to update England's contribution to the UK's Prioritised Action Framework (PAF).

The SIPs are not formal consultation documents, but if you have any comments about the SIP or would like more information please email us at [IPENSLIFEProject@naturalengland.org.uk](mailto:IPENSLIFEProject@naturalengland.org.uk), or contact Natural England's Responsible Officer for the site via our enquiry service 0300 060 3900, or [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk)

**This Site Improvement Plan covers the following Natura 2000 site(s)**

**UK0012672 Cannock Extension Canal SAC**

## Site description

Cannock Extension Canal SAC supports the largest known population of Floating Water-plantain *Luronium natans* in Staffordshire. Floating water-plantain is a rare, small white-flowered water plant only found in Europe. In the UK it is considered a nationally scarce plant. It is found in Wales, and central England, growing in lakes, reservoirs, ponds, slow-flowing rivers and canals.

Floating water-plantain occurs as two forms: in shallow water with floating oval leaves; in deep water with submerged rosettes of narrow leaves. The assemblage of 34 aquatic plant species places this site in the top 20% of British canals. The site also has a good dragonfly assemblage.

## Plan Summary

*This table shows the prioritised issues for the site(s), the features they affect, the proposed measures to address the issues and the delivery bodies whose involvement is required to deliver the measures. The list of delivery bodies will include those who have agreed to the actions as well as those where discussions over their role in delivering the actions is on-going.*

Priority & Issue	Pressure or Threat	Feature(s) affected	Measure	Delivery Bodies
1 Water Pollution	Pressure	S1831 Floating water-plantain	Assess and reduce sediment inputs and diffuse pollution	Canal and River Trust, Environment Agency, Natural England, Landowner(s)
2 Overgrazing	Pressure	S1831 Floating water-plantain	Assess the effects of Canada geese	Canal and River Trust, Natural England
3 Invasive species	Pressure/ Threat	S1831 Floating water-plantain	Monitor and control invasive non-native species.	Canal and River Trust, Natural England
4 Air Pollution: risk of atmospheric nitrogen deposition	Pressure	S1831 Floating water-plantain	Develop a Site Nitrogen Action Plan	Not yet determined

## Issues and Actions

*This table outlines the prioritised issues that are currently impacting or threatening the condition of the features, and the outstanding actions required to address them. It also shows, where possible, the estimated cost of the action and the delivery bodies whose involvement will be required to implement the action. Lead delivery bodies will be responsible for coordinating the implementation of the action, but not necessarily funding it. Delivery partners will need to support the lead delivery body in implementing the action. In the process of developing the SIPs Natural England has approached the delivery bodies to seek agreement on the actions and their roles in delivering them, although in some cases these discussions have not yet been concluded. Other interested parties, including landowners and managers, will be involved as the detailed actions are agreed and delivered. Funding options are indicated as potential (but not necessarily agreed or secured) sources to fund the actions.*

### 1 Water Pollution

Historic sediment loads into the canal have occurred, the origin of which has now been resolved. However this may need to be revisited to protect the site in the future as heavy rainfall events cause stained inflows into the site indicating that there is still a sediment load, albeit low, in the inflow water. In addition all other inflows into the canal need to be assessed to ensure that only clean water is entering the canal.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>1A</b>	Investigate known inflow to make sure that previous works to control sediments are still having the desired effect. If these are not working properly, they need to be rectified to address the problem.	Not yet determined	2014-2015	Partnership agreement	Not yet determined	Natural England	Canal and River Trust, Environment Agency, Landowner(s)
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>1B</b>	There is a need to understand the flow of water from all land surrounding the site, including any road drainage.Undertake a catchment walkover to assess all inflows, including any discharges from boats, moorings and roads. Devise solutions if any problems are found.	Not yet determined	2014-18	Partnership agreement	Not yet determined	Natural England	Environment Agency, Local Authorities, Landowner(s)

## 2 Overgrazing

Large groups of Canada geese are grazing on the waterplants in the canal. There is a risk that this could affect the vegetation community including Floating water-plantain as well as contributing additional nutrients via excreta.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>2A</b>	The effects of grazing on aquatic macrophytes by large groups of Canada geese needs to be assessed and resolved.	Not yet determined	2014-18	Investigation / Research / Monitoring	Conservation Enhancement Scheme (CES)	Canal and River Trust	Natural England
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>2B</b>	Raise awareness of the importance of the site with the local community if the feeding of geese (e.g. with bread) is an issue.	Not yet determined	2014-20	Advice: Education & awareness raising	Not yet determined	Canal and River Trust	Natural England

## 3 Invasive species

Water fern *Azolla filiculoides* and Water pennywort *Hydrocotyle ranunculoides* have been present on the canal in the recent past and have been successfully controlled by the Canal and Rivers Trust. Any invasive species that get into the canal need to be eradicated to prevent damage to the interest features and associated biodiversity of the site.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>3A</b>	Continue to monitor regularly and control as necessary all invasive non-native species.	Not yet determined	2014-20	Invasive Control Plan: Other	Not yet determined	Canal and River Trust	Natural England

## 4 Air Pollution: risk of atmospheric nitrogen deposition

Nitrogen deposition exceeds site relevant critical load. The site could be affected by major roads, industrial estates and farming in the vicinity.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>4A</b>	Control, reduce and ameliorate atmospheric nitrogen impacts.	Not yet determined	2014-20	Site Nitrogen Action Plan	Not yet determined	Not yet determined	Not yet determined

## Site details

The tables in this section contain site-relevant contextual information and links

### Qualifying features

#UK Special responsibility

**Cannock Extension Canal SAC** S1831 *Luronium natans*: Floating water-plantain

### Site location and links

#### Cannock Extension Canal SAC

Area (ha) **5.47**      Grid reference **SK020058**      [Map link](#)

Local Authorities      Staffordshire; Walsall

Site Conservation Objectives      [European Site Conservation Objectives for Cannock Extension Canal SAC](#)

European Marine Site conservation advice      [n/a](#)

Regulation 33/35 Package      [n/a](#)

Marine Management Organisation site plan      [n/a](#)

## Water Framework Directive (WFD)

*The Water Framework Directive (WFD) provides the main framework for managing the water environment throughout Europe. Under the WFD a management plan must be developed for each river basin district. The River Basin Management Plans (RBMP) include a summary of the measures needed for water dependent Natura 2000 sites to meet their conservation objectives. For the second round of RBMPs, SIPs are being used to capture the priorities and new measures required for water dependent habitats on Natura 2000 sites. SIP actions for non-water dependent sites/habitats do not form part of the RBMPs and associated consultation.*

### **Cannock Extension Canal SAC**

<i>River basin</i>	Humber	<a href="#">Humber RBMP</a>
<i>WFD Management catchment</i>	Staffordshire Trent Valley	
<i>WFD Waterbody ID (Cycle 2 draft)</i>	n/a	

## Overlapping or adjacent protected sites

Site(s) of Special Scientific Interest (SSSI)	
Cannock Extension Canal SAC	Cannock Extension Canal SSSI

National Nature Reserve (NNR)	
Cannock Extension Canal SAC	n/a

Ramsar	
Cannock Extension Canal SAC	n/a

Special Areas of Conservation (SAC) and Special Protection Areas (SPA)	
Cannock Extension Canal SAC	n/a

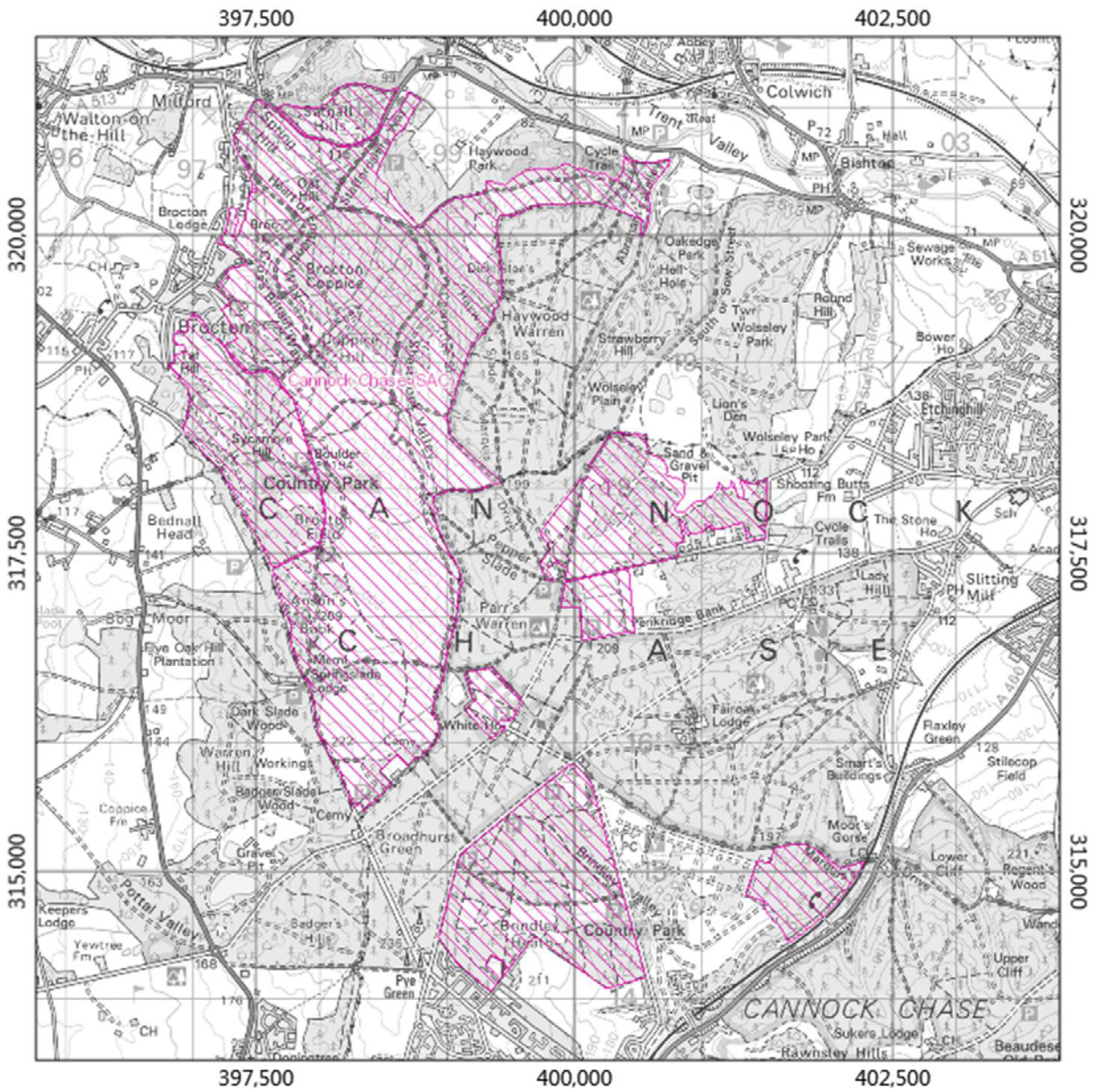
<i>Version</i>	<i>Date</i>	<i>Comment</i>
0.3	07/10/2014	

[www.naturalengland.org.uk/ipens2000](http://www.naturalengland.org.uk/ipens2000)






# Cannock Chase SAC



## Key

-  Special Areas of Conservation England © Natural England
- Ordnance Survey (Greyscale) © Ordnance Survey



Map Produced from WebMap2 on 24/10/18

Map Projection: British National Grid

Map Scale at A4: 1:46,379

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# Cannock Chase

## Site details



Location of Cannock Chase SAC/SCI/cSAC

<b>Country</b>	England
<b>Unitary Authority</b>	Shropshire and Staffordshire
<b>Centroid*</b>	SJ982188
<b>Latitude</b>	52.76638889
<b>Longitude</b>	-2.026666667
<b>SAC EU code</b>	UK0030107
<b>Status</b>	Designated Special Area of Conservation (SAC)
<b>Area (ha)</b>	1244.2

\* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

## General site character

Inland water bodies (Standing water, Running water) (0.5%)  
Heath, Scrub, Maquis and Garrigue, Phygrana (76.3%)  
Coniferous woodland (12%)

Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas) (10.5%)  
Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites) (0.7%)

[Natura 2000 standard data form](#) for this site as submitted to Europe (PDF, < 100kb).

[Interactive map](#) from MAGIC (Multi-Agency Geographic Information for the Countryside).

### Note:

When undertaking an appropriate assessment of impacts at a site, **all** features of European importance (both primary and non-primary) need to be considered.

## Annex I habitats that are a primary reason for selection of this site

### 4030 [European dry heaths](#)

The area of lowland heathland at Cannock Chase is the most extensive in the Midlands, although there have been losses due to fragmentation and scrub/woodland encroachment. The character of the vegetation is intermediate between the upland or northern heaths of England and Wales and those of southern counties. Dry heathland communities belong to NVC types H8 *Calluna vulgaris* – *Ulex gallii* and H9 *Calluna vulgaris* – *Deschampsia flexuosa* heaths. Within the heathland, species of northern latitudes occur, such as cowberry *Vaccinium vitis-idaea* and crowberry *Empetrum nigrum*. Cannock Chase has the main British population of the hybrid bilberry *Vaccinium intermedium*, a plant of restricted occurrence. There are important populations of butterflies and beetles, as well as European nightjar *Caprimulgus europaeus* and five species of bats.

## Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

### 4010 [Northern Atlantic wet heaths with \*Erica tetralix\*](#)

## Annex II species that are a primary reason for selection of this site

Not applicable.

## Annex II species present as a qualifying feature, but not a primary reason for site selection

Not applicable.

*Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.*



# NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),  
Proposed Sites for Community Importance (pSCI),  
Sites of Community Importance (SCI) and  
for Special Areas of Conservation (SAC)

SITE UK0030107  
SITENAME Cannock Chase

## TABLE OF CONTENTS

- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES](#)
- [6. SITE MANAGEMENT](#)

## 1. SITE IDENTIFICATION

<b>1.1 Type</b> B	<b>1.2 Site code</b> UK0030107	<a href="#">Back to top</a>
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### 1.3 Site name

Cannock Chase

<b>1.4 First Compilation date</b> 2001-03	<b>1.5 Update date</b> 2015-12
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### 1.6 Respondent:

**Name/Organisation:** Joint Nature Conservation Committee  
**Address:** Joint Nature Conservation Committee Monkstone House City Road Peterborough  
PE1 1JY  
**Email:**

**Date site proposed as SCI:** 2001-03  
**Date site confirmed as SCI:** 2004-12  
**Date site designated as SAC:** 2005-04

**National legal reference of SAC designation:**

Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010  
(<http://www.legislation.gov.uk/uksi/2010/490/contents/made>).

## 2. SITE LOCATION

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G	Code	Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Gl
I	1092	<a href="#">Austropotamobius pallipes</a>			p				P	DD	D			
A	1166	<a href="#">Triturus cristatus</a>			p	11	50	i		M	D			

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

## 4. SITE DESCRIPTION

### 4.1 General site character

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Habitat class	% Cover
N08	76.3
N17	12.0
N21	10.5
N06	0.5
N23	0.7
<b>Total Habitat Cover</b>	<b>100</b>

### Other Site Characteristics

1 Terrestrial: Soil & Geology: nutrient-poor,acidic,peat,sandstone 2 Terrestrial: Geomorphology and landscape: lowland

### 4.2 Quality and importance

Northern Atlantic wet heaths with *Erica tetralix* for which the area is considered to support a significant presence. European dry heaths for which this is considered to be one of the best areas in the United Kingdom.

### 4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	A04		I
H	K04		I
H	J02		B
H	H04		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
H	B02		I
H	A02		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

#### 4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): [http://jncc.defra.gov.uk/pdf/Natura2000\\_StandardDataForm\\_UKApproach\\_Dec2015.pdf](http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf)

<http://publications.naturalengland.org.uk/category/6490068894089216>

<http://publications.naturalengland.org.uk/category/3212324>

### 5. SITE PROTECTION STATUS (optional)

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#### 5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

### 6. SITE MANAGEMENT

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#### 6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

#### 6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No, but in preparation
<input checked="" type="checkbox"/>	No

#### 6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

## EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the [official European Union guidelines for the Standard Data Form](#). The relevant page is shown in the table below.

### 1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

### 3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

### 3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippophila rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57



CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

### 3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

### 3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

### 3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

### 3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

### 3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

### 3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

### 3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

### 3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

#### 4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

#### 4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc.), trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

### 5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

**Name:** Cannock Chase  
**Unitary Authority/County:** Staffordshire  
**SAC status:** Designated on 1 April 2005  
**Grid reference:** SJ982188  
**SAC EU code:** UK0030107  
**Area (ha):** 1236.93  
**Component SSSI:** Cannock Chase SSSI

### Site description:

The area of lowland heathland at Cannock Chase is the most extensive in the Midlands. The character of the vegetation is intermediate between the upland or northern heaths of England and Wales and those of southern counties. Dry heathland communities are of the heather – western gorse (*Calluna vulgaris* – *Ulex gallii*) and heather – wavy hair-grass (*Calluna vulgaris* – *Deschampsia flexuosa*) types. Within the heathland, species of northern latitudes occur, such as cowberry *Vaccinium vitis-idaea* and crowberry *Empetrum nigrum*. Cannock Chase has the main British population of the hybrid bilberry *Vaccinium intermedium*, a plant of restricted occurrence. The scarcity of water over much of the Chase effectively confines wetland flora and fauna to the stream valley systems and a scatter of natural and artificial pools and damp depressions. The Oldacre and Sherbrook valleys have small-scale mosaics of spring-fed mire and wet heath vegetation, a result of complex water chemistry. Where acidic conditions prevail the mires are mostly formed of bog mosses *Sphagnum* spp. with cranberry *Vaccinium oxycoccus*, cottongrasses *Eriophorum* spp. and cross-leaved heath *Erica tetralix*.

**Qualifying habitats:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- European dry heaths
- Northern Atlantic wet heaths with *Erica tetralix*. (Wet heathland with cross-leaved heath)

This citation relates to a site entered in the Register of European Sites for Great Britain.

Register reference number: UK0030107

Date of registration: 14 June 2005

Signed [REDACTED]

On behalf of the Secretary of State for Environment,  
Food and Rural Affairs

# European Site Conservation Objectives for Cannock Chase Special Area of Conservation Site Code: UK0030107



With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;**

- **The extent and distribution of qualifying natural habitats**
- **The structure and function (including typical species) of qualifying natural habitats, and,**
- **The supporting processes on which the qualifying natural habitats rely**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

## **Qualifying Features:**

H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath  
H4030. European dry heaths

## Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the “Habitats Regulations”). They must be considered when a competent authority is required to make a ‘Habitats Regulations Assessment’, including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a [Special Area of Conservation \(SAC\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term ‘favourable conservation status’ is defined in regulation 3 of the Habitats Regulations.

**Publication date:** 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.



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

**Cannock Chase Special Area of Conservation (SAC)  
Site code: UK0030107**



Photograph: Natural England.

**Date of Publication: 8 December 2017**



## **About this document**

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Cannock Chase SAC. This advice should therefore be read together with the SAC Conservation Objectives available [here](#).

This advice replaces a previous draft version (dated 3 July 2017).

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.

You may also find it helpful to refer to Natural England's SSSI Impact Risk Zone dataset available [here](#).

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](mailto:HDIRConservationObjectivesNE@naturalengland.org.uk)**

## About this site

### European Site information

<b>Name of European Site</b>	Cannock Chase Special Area of Conservation (SAC)
<b>Location</b>	Staffordshire (SJ982188)
<b>Site Maps</b>	The designated boundary of this site can be viewed <a href="#">here</a> on the MAGIC website
<b>Designation Date</b>	01 April 2005
<b>Qualifying Features</b>	European dry heaths Northern Atlantic wet heaths with <i>Erica tetralix</i> . (Wet heathland with cross-leaved heath)
<b>Designation Area</b>	1236.93 ha
<b>Designation Changes</b>	None
<b>Feature Condition Status</b>	Details of the feature condition assessments made at this site can be found using Natural England's <a href="#">Designated Sites System</a>
<b>Names of component Sites of Special Scientific Interest (SSSIs)</b>	Cannock Chase SSSI
<b>Relationship with other European or International Site designations</b>	None
<b>Other information</b>	<a href="#">Natura 2000 Standard Data Form</a> for Cannock Chase SAC

### Site background and geography

Cannock Chase is a large, diverse area of semi-natural vegetation comprising the most ecologically valuable parts of the former Royal Chase, one of a nationally important series of relict ancient Forest/Chase landscapes in the Midlands.

Cannock Chase falls within the [Cannock Chase and Cank Wood National Character Area](#) (NCA), situated on a higher sandstone plateau with deeply incised valleys, created during the last glaciation, some of which still have flowing water, some of which are now dry. Acidic soils derived from Triassic sandstone and marls support a range of heathland, woodland and scrub types of varied origin.

The area of lowland heathland is the most extensive in the Midlands. Its special interest also reflects an unusual floristic character, intermediate between heathlands of northern and upland England and Wales and those of southern counties. The valley mire/wet heath communities are rare, threatened vegetation types, being some of the most floristically-rich and representative examples of their type in central England. The outstandingly diverse invertebrate fauna includes many species of restricted national occurrence.

In addition to woodland birds, Cannock Chase is home to several special heathland birds, including rare and vulnerable ground nesting birds such as nightjar and woodlark that nest and forage on the

heathland. Native reptiles such as adder and common lizard and amphibians such as great crested newt are also here, often in high numbers as regards reptiles, highlighting the importance of Cannock Chase as a regional refuge for these vulnerable species.

Dry heathland communities are of the heather – western gorse (*Calluna vulgaris* – *Ulex gallii*) and heather – wavy hair-grass (*Calluna vulgaris* – *Deschampsia flexuosa*) types. Within the heathland, species of northern latitudes occur, such as cowberry *Vaccinium vitis-idaea* and crowberry *Empetrum nigrum*. Cannock Chase has the main British population of the hybrid bilberry *Vaccinium intermedium*, a plant of restricted occurrence.

## **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:**

- **H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath**

Wet heath usually occurs on acidic, nutrient-poor substrates, such as shallow peats or sandy soils with impeded drainage. The vegetation is typically dominated by mixtures of cross-leaved heath *Erica tetralix*, heather *Calluna vulgaris*, grasses, sedges and *Sphagnum* bog-mosses.

The scarcity of water over much of the Chase effectively confines wetland flora and fauna to the stream valley systems and a scatter of natural and artificial pools and damp depressions. The Oldacre and Sherbrook valleys have small-scale mosaics of spring-fed mire and wet heath vegetation, a result of complex water chemistry. Where acidic conditions prevail the mires are mostly formed of bog mosses *Sphagnum* spp. with cranberry *Vaccinium oxycoccus*, cotton-grasses *Eriophorum* spp. and cross-leaved heath *Erica tetralix*.

The wet heath vegetation at the SAC corresponds mainly to the NVC community type M16 *Erica tetralix* – *Sphagnum compactum* wet heath, which is present in mosaics in the Sher Brook Valley with a variety of other vegetation communities (vegetation with affinities to M6 *Carex echinata*-*Sphagnum fallax* mire, M15 *Scirpus cespitosus* – *Erica tetralix* mire, M21 *Narthecium ossifragum*-*Sphagnum papillosum* mire and M25 *Molinia caerulea*-*Potentilla erecta* mire. Also present is vegetation with affinities to M22 *Juncus subnodulosus*-*Cirsium palustre* and M24 *Molinia caerulea* – *Cirsium dissectum* fen meadow communities, M23 *Juncus effusus/acutiflorus*-*Galium palustre* rush pasture and S3 *Carex paniculata* swamp).

In the Oldacre Valley the wet heath mosaic vegetation has affinities to M25 *Molinia caerulea*-*Potentilla erecta* mire and M6 *Carex echinata*-*Sphagnum fallax* mire. Also present is vegetation with affinities to M23 *Juncus effusus/acutiflorus*-*Galium palustre* rush pasture, and S3 *Carex paniculata* swamp.

Also in Oldacre Valley is an area of M10 *Carex dioica*-*Pinguicula vulgaris* mire and an area of M22 *Juncus subnodulosus*-*Cirsium palustre* fen meadow.

At Womere there is an area of M4 *Carex rostrata*-*Sphagnum fallax* mire.

- **H4030. European dry heaths**

European dry heaths typically occur on freely-draining, acidic to circumneutral soils with generally low nutrient content. Ericaceous dwarf-shrubs dominate the vegetation. The most common is heather *Calluna vulgaris*, which often occurs in combination with gorse *Ulex* spp., bilberry *Vaccinium* spp. or bell heather *Erica cinerea*, though other dwarf-shrubs are important locally. Nearly all dry heath habitat is semi-natural, being derived from woodland through a long history of grazing and burning.

The area of lowland heathland at Cannock Chase is the most extensive in the English Midlands, although there have been losses due to fragmentation and scrub/woodland encroachment. The character of the vegetation is intermediate between the upland or northern heaths of England and Wales and those of southern counties.

Dry heathland communities belong to NVC types H8 *Calluna vulgaris*–*Ulex gallii* and H9 *Calluna vulgaris*–*Deschampsia flexuosa* heaths. Within the heathland, species of northern latitudes occur, such as cowberry *Vaccinium vitis-idaea* and crowberry *Empetrum nigrum*. Cannock Chase has the main British population of the hybrid bilberry *Vaccinium intermedium*, a plant of restricted occurrence.

### Qualifying Species:

- None

### References

RODWELL, J.S. (ed.) 1991. *British Plant Communities. Volume 1. Woodlands and scrub*. Cambridge University Press.

RODWELL, J.S. (ed.) 1991. *British Plant Communities. Volume 2. Mires and heath*. Cambridge University Press.

**Table 1: Supplementary Advice for Qualifying Features: H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath**

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Extent and distribution of the feature</b>	<b>Extent of the feature within the site</b>	<p>Maintain the total extent of the H4010 wet heath feature (as a mosaic of vegetation with affinities to M6, M15, M16, M21 and M25, along with S3 and M23 vegetation) at no less than 22ha, including 1ha of M22 &amp; M24 and smaller areas, &lt;0.01ha, of M10 and M4.</p> <p>Maintain valley bogs/fen containing a mosaic of M6 <i>Carex echinata-Sphagnum fallax</i> mire, M15 <i>Scirpus cespitosus – Erica tetralix</i> mire, M16 – <i>Erica tetralix &amp; Sphagnum compactum</i> wet heath, M21 <i>Narthecium ossifragum-Sphagnum papillosum</i> mire and M25 <i>Molinia caerulea-Potentilla erecta</i> mire, along with with M23 <i>Juncus effusus/acutiflorus-Galium palustre</i> rush pasture and S3 <i>Carex paniculata</i> swamp.</p> <p>Also present is vegetation with affinities to M22 <i>Juncus subnodulosus-Cirsium palustre</i> and M24 <i>Molinia caerulea – Cirsium dissectum</i> fen meadow communities, and M10 <i>Carex dioica-Pinguicula vulgaris</i> mire.</p> <p>M4 <i>Carex rostrata-Sphagnum fallax</i> mire is also present within the European Dry Heaths feature.</p>	<p>There should be no measurable net reduction in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored.</p> <p>The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>The actual area of wet heath cannot be calculated separately from the other vegetation communities forming the valley bogs/fen mosaic.</p>	<p>EADES, P. PENDLETON, E., TRATT, R., SHAW, S. &amp; WHEELER, B. 2016. CANNOCK CHASE SAC PARTNERSHIP. 2016. NATURAL ENGLAND. 2014. WHITE, J., MCGIBBON, R. &amp; UNDERHILL-DAY, J. 2012. LILEY, D., UNDERHILL-DAY, J., WHITE, J. &amp; SHARP, J. 2009. SHAW, S.C. 2010. GODFREY, M. &amp; HILL, R. 2006.</p> <p>This attribute will be periodically monitored as part of Natural</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				England's SSSI condition assessments.
<b>Extent and distribution of the feature</b>	<b>Spatial distribution of the feature within the site</b>	Maintain the distribution and configuration of the H4010 wet heath feature mosaic, including where applicable its component vegetation types, across the site.	<p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. 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.</p> <p>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 amount of light, temperature, wind, and even noise that it receives compared to its interior. Such conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature.</p>	Please see above under "Extent".
<b>Structure and function (including its typical species)</b>	<b>Vegetation community transitions</b>	Maintain the extent of areas of transition between the H4010 wet heath feature mosaic and communities which form other heathland-associated habitats (such as dry and humid heaths, mires, acid grasslands, scrub and woodland).	<p>Transitions and zonation 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.</p> <p>Retaining such transitions can provide further diversity to the habitat feature, and support additional flora and fauna. This is an important attribute as many characteristic heathland species utilise the transitions between vegetation types or use different vegetation types during different stages of their life cycle.</p>	<p>EADES, P. PENDLETON, E., TRATT, R., SHAW, S. &amp; WHEELER, B. 2016. NATURAL ENGLAND. 2014. SHAW, S.C. 2010. GODFREY, M. &amp; HILL, R. 2006.</p> <p>This attribute will be</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				periodically monitored as part of Natural England's SSSI condition assessments.
<b>Structure and function (including its typical species)</b>	<b>Vegetation community composition</b>	<p>Ensure the component vegetation communities of the H4010 wet heath feature mosaic are broadly referable to and characterised by the following National Vegetation Classification types:</p> <p><b>In the Oldacre Valley:</b> wet heath mosaic vegetation with affinities to M25 <i>Molinia caerulea-Potentilla erecta</i> mire and M6 <i>Carex echinata-Sphagnum fallax</i> mire.</p> <p><b>In the Sher Brook Valley:</b> M16 <i>Erica tetralix – Sphagnum compactum</i> wet heath, present in mosaics with a variety of other vegetation communities (vegetation with affinities to M6 <i>Carex echinata-Sphagnum fallax</i> mire, M15 <i>Scirpus cespitosus – Erica tetralix</i> mire, M21 <i>Narthecium ossifragum-Sphagnum papillosum</i> mire and M25 <i>Molinia caerulea-Potentilla erecta</i> mire.</p>	<p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management.</p> <p>In the UK these have been categorised by the National Vegetation Classification (NVC). Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature.</p> <p>This will also help to conserve their typical plant species, and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p>	<p>EADES, P. PENDLETON, E., TRATT, R., SHAW, S. &amp; WHEELER, B. 2016. NATURAL ENGLAND. 2014. SHAW, S.C. 2010. GODFREY, M. &amp; HILL, R. 2006.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>
<b>Structure and function (including its typical species)</b>	<b>Vegetation structure: cover of dwarf shrubs</b>	<p>Restore an overall cover of dwarf shrub species across the H4010 wet heath feature to within 25-30%.</p> <p>Dwarf-shrubs include: <i>Calluna vulgaris</i>, <i>Empetrum nigrum</i>, <i>Erica cinerea</i>, <i>E.</i></p>	<p>Variations in the structure of the heathland vegetation (vegetation height, amount of canopy closure, and patch structure) are needed to maintain high niche diversity and hence high species richness of characteristic heathland plants and animals.</p> <p>Many species also utilise the transitions between vegetation types or use different</p>	<p>EADES, P. PENDLETON, E., TRATT, R., SHAW, S. &amp; WHEELER, B. 2016.</p>

Attributes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
	<p><i>tetralix</i>, <i>Ulex gallii</i>, <i>Vaccinium myrtillus</i>, <i>V. vitis-idaea</i> (and hybrids).</p>	<p>vegetation types during different stages of their life cycle. The structural character of the heathland feature is strongly influenced by the growing habits of its dominant species which in most cases will be ericoids (i.e. plants that look like heathers, including members of the Ericaceae and Empetraceae families). The ericaceous species heather or ling <i>Calluna vulgaris</i>, bell heather <i>Erica cinerea</i>, cross-leaved heath <i>Erica tetralix</i>, Dorset heath <i>Erica ciliaris</i>, Cornish heath <i>Erica vagans</i>, bilberry or blaeberry <i>Vaccinium myrtillus</i> and cowberry <i>Vaccinium vitis-idaea</i> are the commonest and most characteristic dwarf-shrubs. Hybrids of Dorset and crossleaved heath and of bilberry and cowberry can be locally abundant. <i>Calluna</i> is usually the most abundant. Crowberry <i>Empetrum nigrum</i>, another common species in some coastal and transitional heaths, is not strictly ericaceous but is often treated as an ericoid species.</p> <p><b>Reason for restore:</b> this is due to the currently low cover (5-10%) of dwarf shrubs present across the feature as recorded in the latest condition assessments. At Oldacre valley this is considered to be due to a combination of the long-term effects of:</p> <ul style="list-style-type: none"> <li>• Damaged hydrology throughout the wetland area due to the presence of the functioning WW1 drainage system</li> <li>• Eutrophication from the WW1 drainage system</li> <li>• Lack of conservation grazing management contributing to a dominance of <i>Molinia caerulea</i> that has resulted in poor structural and species diversity</li> </ul> <p>At Sher Brook valley, this is due to a combination of the long-term effects of:</p> <ul style="list-style-type: none"> <li>• Drying out of the hydrological unit</li> <li>• Lack of conservation grazing management contributing to a dominance of <i>Molinia caerulea</i> that has resulted in poor structural and species diversity</li> <li>• Localized eutrophication.</li> </ul> <p>In 2016 further work was done to understand the extent of the drying out in the Sher Brook valley and this investigation revealed former groundwater outflows that are now dry, and peat in situations too dry to currently lead to the formation of peat. Such features indicate that there has been a general reduction in elevation of groundwater outflows along the valley, in the order of between 1 and 3 m. The timescale of such changes is not certain, but the state of decay of some tussock sedge remnants is suggestive of several decades at least.</p>	<p>NATURAL ENGLAND. 2014; 2013; 2010. SHAW, S.C. 2010. GODFREY, M. &amp; HILL, R. 2006.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Vegetation structure: heather age structure	Restore a diverse age structure amongst the ericaceous shrubs typically found across the H4010 wet heath feature. No one growth form should be dominant.	<p>Each phase of growth associated with the characteristic heathers which dominate this feature also represents different microclimatic conditions and microhabitats which may provide shelter or food to other organisms.</p> <p>Therefore, it is important to maintain a mosaic of heather comprising different phases of growth, with all stages of growth present across the wet heath feature.</p> <p><b>Reason for restore:</b> this is due to a lack of a diverse age structure amongst the ericaceous shrubs as most is mature with hardly any pioneer or young heather. This even-aged structure is due to the effects of insufficient removal of biomass either by conservation grazing or cutting, contributing to dominance by purple moor-grass <i>Molinia caerulea</i>. Underpinning this is the effects of the damaged hydrology. Measures to restore as near-natural as possible hydrological functioning of the wetland, along with appropriate long-term grazing management, will encourage the regeneration of typical ericaceous shrubs at the expense of the dominant <i>Molinia caerulea</i> and help restore the feature over time.</p>	<p>EADES, P. PENDLETON, E., TRATT, R., SHAW, S. &amp; WHEELER, B. 2016. NATURAL ENGLAND. 2014; 2013; 2010. SHAW, S.C. 2010. GODFREY, M. &amp; HILL, R. 2006.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>
	Vegetation structure: cover of gorse	Maintain the cover of common gorse <i>Ulex europaeus</i> across the whole of H4010 wet heath feature at a typically low level of <10%.	<p>Gorse as a component of heathland is a very valuable wildlife habitat, and often a marker of relict heath and common. Both dense and spiny, it provides good, protected cover for many wildlife species: birds, mammals and reptiles; breeding habitat for rare or declining bird species, and excellent winter roosting.</p> <p>The flowers, borne at a time of year when other sources of pollen or nectar are in short supply, are particularly good for insects and other invertebrate pollinators. However gorse may cause problems if unchecked by dominating an area, eliminating other typical heathland species. Extensive mature stands may also be serious fire hazards.</p>	<p>NATURAL ENGLAND. 2014; 2013; 2010. This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
	<b>Vegetation structure: tree cover</b>	Restore the open character of the H4010 wet heath feature, with a typically scattered (not overly clumped in one area) and low cover of trees and scrub of between 1-10%	<p>Scrub (mainly trees or tree saplings above 1 m in height) and isolated trees are usually very important in providing warmth, shelter, cover, food plants, perches, territorial markers and sources of prey for typical heathland invertebrates and vertebrates. But overall cover of scrub and trees across this habitat feature should be maintained or restored to a fairly sparse level, with a structurally complex edge and with characteristic heathland vegetation as ground cover. If scrub is locally important for any associated species with their own specific conservation objectives, then a higher level of cover will be acceptable. The area of scrub/tree cover should be stable or not increasing as a whole.</p> <p><b>Reason for restore:</b> the latest assessment in July 2013 for Unit 25 Oldacre valley mire found that the feature failed this target due to an average cover of 15% trees and scrub in the assessed stops. Tree and scrub cover across the wetland mosaic in the Oldacre valley is currently estimated (from 2016 aerial photography and site visits) at 30%.</p> <p>The latest assessment in Aug 2010 for Unit 26 Sher Brook valley found that the feature failed this target due to a cover of trees and scrub of 10-15% locally at the southern end of the unit where the best mire remains. Tree and scrub cover across the wetland mosaic in the Sher Brook valley is currently estimated (from 2016 aerial photography and site visits) at 20%.</p>	NATURAL ENGLAND. 2014; 2013; 2010. This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.
<b>Structure and function (including its typical species)</b>	<b>Vegetation composition: bracken cover</b>	Restore the cover of dense bracken across the H4010 wet heath feature to a typically low level of <5%.	<p>The spread of bracken <i>Pteridium aquilinum</i> is a problem on many lowland heathlands. The unpalatable nature and density of bracken as a tall-herb fern, and its decomposing litter, can smother and shade out smaller and more characteristic heathland vegetation. Usually active management of bracken is required to reduce or contain its cover across this habitat feature. But this fern has also some nature conservation value, for example on sites where fritillary butterflies occur and utilise bracken litter habitat.</p> <p><b>Reason for restore:</b> the latest assessment in July 2013 for Unit 25 Oldacre valley mire found that bracken cover was on average 10% in the assessed stops. Dense bracken cover across the wetland mosaic in the Oldacre valley is currently estimated (from 2016 aerial photography and site visits) at 15%. The latest assessment in Aug 2010 for Unit 26 Sher Brook valley found that bracken cover was also on average 10% in the assessed stops. Dense bracken cover across the wetland mosaic in the Sher Brook valley is currently estimated (from 2016 aerial</p>	NATURAL ENGLAND. 2014; 2013; 2010. 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)
			photography and site visits) at 25%.	
	<b>Bare ground</b>	Restore the cover of bare ground within the H4010 wet heath feature to at least 1% but no more than 10% cover, consisting of muddy, exposed bare ground.	<p>Warm, dry, bare substrate close to or within heathland vegetation is important as basking, hunting, nesting and burrowing sites for certain plants, invertebrates, birds and amphibians strongly associated with dry heaths.</p> <p>Bare ground is defined here as soil (especially sandy, exposed soil in dry heaths and peaty soil besides open water in wet heaths) which is free of vegetation cover or litter and not subject to heavy and regular disturbance. It can be natural or man-made and should be firm, sun-lit, horizontal, sloping or vertical exposed bare ground.</p> <p><b>Reason for restore:</b> the latest condition assessments recorded no bare ground in the assessed stops and there is no conservation grazing or small-scale manual scraping currently undertaken to create this bare ground micro-habitat feature.</p>	NATURAL ENGLAND. 2014; 2013; 2010. This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.
<b>Structure and function (including its typical species)</b>	<b>Key structural, influential and/or site-distinctive species: flora and fauna</b>	<p>Restore the abundance of the species listed below to enable each of them to be a viable component of the H4010 wet heath feature:</p> <p>Constant and preferential wet heath plant species of M6, M15, M16 and M25 along with M10, M21, M22, M23, M25 &amp; S3 vegetation types in the intimate valley bog/mire mosaic including <i>Erica tetralix</i>, <i>Vaccinium oxycoccus</i>, <i>Eriophorum angustifolium</i>, <i>Sphagnum</i> species, <i>Thelypteris thelypteroides</i>, <i>Drosera rotundifolia</i>, <i>Eleocharis quinqueflora</i>, <i>Narthecium ossifragum</i>, <i>Carex dioica</i>, <i>Carex lepidocarpa</i>, <i>Carex paniculata</i>, <i>Pinguicula vulgaris</i> and <i>Parnassia palustris</i>.</p> <p>Pending the results of future surveys for these species, restore populations of the following characteristic species of wet</p>	<p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> <li>- <i>Structural</i> species which form a key part of the habitat's structure or help to define an Annex I habitat on a site (see also the attribute for 'vegetation community composition').</li> <li>- <i>Influential</i> 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).</li> <li>- <i>Site-distinctive</i> species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular site.</li> </ul> <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary.</p> <p>The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p>	JOY, J. 2014. NATURAL ENGLAND. 2014, 2014b. MORRIS, P. 2012. SHAW, S.C. 2010. GRUNDY, D. 2007. JOY, J. 2006. GODFREY, M. & HILL, R. 2006. GODFREY, M. & HILL, R. 2006a. WEBB, J. R. & JUKES, A. 2001. ENGLISH NATURE. 1987.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		heath and associated transition areas: <ul style="list-style-type: none"> <li>Bog Bush Cricket <i>Metrioptera brachyptera</i></li> <li>Small pearl-bordered fritillary <i>Boloria selene</i></li> <li><i>Gnypeta velata</i> wetland beetle</li> </ul>	<b>Reason for restore:</b> the habitats on which most of these species rely are not currently in favourable condition it is reasonable to expect that these species populations are not as robust as they might be.	
	<b>Vegetation: undesirable species</b>	Restrict the cover of the following undesirable species across the H4010 wet heath feature at acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread: <p>&lt; 1% cover of exotic species such as <i>Rhododendron ponticum</i>, <i>Gaultheria shallon</i>, <i>Fallopia japonica</i>. Exotic species should be eradicated if possible.</p> <p>Other species in this list may be beneficial for a range of invertebrates and only become indicators of negative quality if they are over the established limit:</p> <p>&lt; 1 % cover of ragwort, nettle, thistles and other herbaceous species such as <i>Cirsium arvense</i>, <i>Digitalis purpurea</i>, <i>Epilobium</i> spp. (excluding <i>E. palustre</i>), <i>Chamerion angustifolium</i>, <i>Juncus effusus</i>, <i>J. squarrosus</i>, <i>Ranunculus</i> spp., <i>Senecio</i> spp., <i>Rumex obtusifolius</i>, <i>Urtica dioica</i>, coarse grasses.</p>	Undesirable non-woody and woody vascular plants species may require active management to avert an unwanted succession to a different and less desirable state. Often they may be indicative of a negative trend relating to another aspect of a site's structure and function. These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/acceptable components or even dominants.	NATURAL ENGLAND. 2014; 2013; 2010. This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.
<b>Structure and function</b>	<b>Functional connectivity</b>	Restore the overall extent, quality and function of any supporting features	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	EADES, P. PENDLETON,

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
(including its typical species)	with wider landscape	within the local landscape which provide a critical functional connection with the site.	<p>objectives. These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are either important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site.</p> <p>These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p> <p><b>Reasons for restore:</b> A “restore” target has been set here for the following reasons:</p> <ol style="list-style-type: none"> <li>1. Securing a semi-natural surface water catchment for both valleys supporting the wet heath feature will support the hydrological functioning on which the wet heath feature relies.</li> <li>2. Similar/complimentary wetland habitats occur in the many valleys draining the Cannock Chase plateau, both inside and outside the SAC. Restoring linkages and habitat management across the plateau will allow landscape conservation of species closely associated with the wet heath feature mosaic such as small pearl bordered fritillary and bog bush cricket and so strengthening their populations in to the future.</li> <li>3. Outside the SAC, but in close proximity to it, are several, large, high quality heathlands that were once part of the former continuous tract of Cannock Chase stretching to Sutton Park (now SSSI and National Nature Reserve) in Birmingham. These are Gentleshaw Common SSSI, Hednesford Hills and Chasewater SSSIs along with Shoal Hill Common Local Wildlife Site and smaller areas of lowland heathland throughout the area. Although now discrete heathland areas, separated from the larger Cannock Chase SAC by forestry, intensive agriculture and peri-urban development, these heathlands provide a critical functional connection to Cannock Chase SAC therefore their continued conservation and enhancement is a priority as it supports the integrity of Cannock Chase SAC. This vital network of heathlands supports species which can</li> </ol>	<p>E., TRATT, R., SHAW, S. &amp; WHEELER, B. 2016. NOAKE, B. 2014. NATURAL ENGLAND. 2014b. STAFFORDSHIRE WILDLIFE TRUST. 2013. JOY, J. 2006. GODFREY, M. &amp; HILL, R. 2006a.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			disperse and range more widely such as birds and invertebrates, forming part of meta-populations that are important for genetic diversity and building resilience to cope with climate change. Restoring and/or creating new corridors of heathland/complimentary heathland habitats (such as acid grassland, scrub and oakwoods (alderwoods in wet areas) between the surviving heathlands is critical to securing the integrity of the SAC into the future	
<b>Structure and function (including its typical species)</b>	<b>Adaptation and resilience</b>	Restore the H4010 wet heath feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site.	<p>This recognises the increasing likelihood of natural habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. 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.</p> <p><b>Reason for restore:</b> the vulnerability of Cannock Chase SAC <u>overall</u> 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 this site is considered to be vulnerable overall but a lower priority for further assessment and action. A "restore" target has been set here because the site is still at risk as wetland habitats, which comprise a small but highly valuable part of the SAC, are at greater risk than the drier heathland habitats, and individual species may be more or less vulnerable than their supporting habitat itself. In many cases, change will be inevitable so appropriate monitoring would be required.</p>	EADES, P. PENDLETON, E., TRATT, R., SHAW, S. & WHEELER, B. 2016. NATURAL ENGLAND, 2015; 2014b; 2014; 2013; 2010. SHAW, S.C. 2010. GODFREY, M. & HILL, R. 2006.
<b>Supporting processes (on which the feature relies)</b>	<b>Conservation measures</b>	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 H4010 wet heath feature.	<p>Active and ongoing conservation management is needed to restore the H4010 wet heath feature at this site.</p> <p>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</p>	EADES, P. PENDLETON, E., TRATT, R., SHAW, S. & WHEELER, B. 2016. NATURAL ENGLAND.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>agreements.</p> <p><b>Reason for restore:</b> in addition to the measures described under the Water Quality section below, conservation grazing is required to control the more competitive species that are a natural component of the feature such as <i>Molinia caerulea</i>, but which dominate over time due to a lack of conservation grazing (and also changes in hydrology), and to increase the vegetation's structural diversity.</p>	2014b. ENGLISH NATURE, 2005.
	<b>Soils, substrate and nutrient cycling</b>	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 H4010 wet heath feature.	<p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter.</p> <p>Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature. This Annex 1 habitat has essentially raw soils with little humus and low nutrient status.</p>	
	<b>Air quality</b>	Restore the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for the H4010 wet heath feature of the site on the Air Pollution Information System ( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ).	<p>This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it.</p> <p>Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH<sub>3</sub>), oxides of nitrogen (NO<sub>x</sub>) and sulphur dioxide (SO<sub>2</sub>), 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.</p> <p>It is recognised that achieving this target may be subject to the development,</p>	<p>CEH. 2015.</p> <p>More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool at <a href="http://www.apis.ac.uk">www.apis.ac.uk</a></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p> <p><b>Reason for restore:</b> the Critical Loads and Levels are being exceeded at present and so are a threat to the wet heath feature, causing enrichment and acidification of its vegetation.</p>	
<b>Supporting processes (on which the feature relies)</b>	<b>Water quality</b>	<p>Restore surface water and/or ground water quality and quantity to a standard which provides the necessary conditions to support and restore the H4010 wet heath feature.</p> <p>There should be no artificial functioning drains.</p>	<p>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.</p> <p>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. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p> <p><b>Reason for restore:</b> currently neither Oldacre valley or the Sher Brook valley are functioning correctly hydrologically to support the wetland habitats present (or those expected to be there) and both are showing signs of nutrient enrichment. In the Oldacre Valley the WW1 drainage system is still working to a certain extent/intercepting natural ground and surface water flows and so impacting on the wet heath mosaic vegetation here. In addition there may be pulses of enrichment from extant structures during heavy rainfall.</p> <p>The conservation measures that are required include investigating the extent and features of the World War 1 camp drainage system in the Oldacre Valley and its impact on the wet heath mosaic features with the aim of restoring to a natural as possible functioning wetland system(s) while conserving the historic World War 1 features.</p> <p>Impacts of altered hydrology are more substantial in the Sher Brook Valley than in the Oldacre Valley. The conservation measures that are required include investigating the hydrology of the Sher Brook Valley catchment to inform restoration options.</p>	<p>EADES, P. PENDLETON, E., TRATT, R., SHAW, S. &amp; WHEELER, B. 2016.</p> <p>NATURAL ENGLAND. 2014.</p> <p>SHAW, S.C. 2010.</p> <p>GODFREY, M. &amp; HILL, R. 2006.</p>



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Supporting processes (on which the feature relies)</b>	<b>Hydrology</b>	Restore the natural hydrological regime at the catchment level to provide the conditions necessary to sustain the H4010 wet heath feature within the site.	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature.</p> <p>Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present.</p> <p>This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts.</p> <p><b>Reason for restore:</b> the wet heath feature in both of the valleys is in poor condition due to altered (man-made) hydrological regimes. Investigations are needed into how a natural hydrological regime can be restored to restore the wet heath mosaic feature. There should be no additional artificial functioning drains.</p>	Please see above under "Water Quality".
<p><b>Version Control</b>            Advice last updated: 8 December 2017 – the supporting notes for the 'functional connectivity' attribute (point 3) have been amended.</p> <p><b>Variations from national feature-framework of integrity-guidance:</b> No variation from national guidance.</p>				

**Table 2: Supplementary Advice for Qualifying Features: H4030. European dry heaths**

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Extent and distribution of the feature</b>	<b>Extent of the feature within the site</b>	Restore the total extent of the H4030 European dry heath feature to 830 hectares	See the notes for this attribute in Table 1 above.  <b>Reason for restore:</b> the existing area of dry heathland covers 750ha with a further 80ha of recent woodland (conifer plantation and secondary birch woodland) that can be easily restored to heathland over time.  There is also c.260ha of site fabric within the SSSI boundary and expansion of the heathland feature into this mainly mixed plantation would be a welcome addition to the heathland area.	NATURAL ENGLAND. 2014.  This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.
	<b>Spatial distribution of the feature within the site</b>	Restore the distribution and configuration of the H4030 European dry heath feature, including where applicable its component vegetation types, across the site.	See the notes for this attribute in Table 1 above.  <b>Reason for restore:</b> please see above under "Extent".	
<b>Structure and function (including its typical species)</b>	<b>Vegetation community composition</b>	Ensure the component vegetation communities of the H4030 European dry heath feature are broadly referable to and characterised by the following National Vegetation Classification types:  H8 <i>Calluna vulgaris-Ulex gallii</i> heath H9 <i>Calluna vulgaris - Deschampsia flexuosa</i> . heath	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).	NATURAL ENGLAND, 2010; 2011; 2012; 2013, 2014.  This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.
	<b>Vegetation community transitions</b>	Maintain areas of transition between the H4030 European dry heath feature and communities which form other heathland-associated habitats (such as	Transitions and 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.	NATURAL ENGLAND. 2014.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		dry and humid heaths, mires, acid grasslands, scrub and woodland).	Retaining such transitions can provide further diversity to the habitat feature, and support additional flora and fauna. This is an important attribute as many characteristic heathland species utilise the transitions between vegetation types or use different vegetation types during different stages of their life cycle.	This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.
<b>Structure and function (including its typical species)</b>	<b>Vegetation structure: cover of dwarf shrubs</b>	<p>Restore an overall cover of dwarf shrub species across the H4030 European dry heath feature which is typically between 60 - 80%.</p> <p>Dwarf-shrubs include: <i>Calluna vulgaris</i>, <i>Empetrum nigrum</i>, <i>E. cinerea</i>, <i>E. tetralix</i>, <i>Ulex gallii</i>, <i>Vaccinium myrtillus</i>, <i>V. vitis-idaea</i> (and hybrids).</p>	<p>Variations in the structure of the heathland vegetation (vegetation height, amount of canopy closure, and patch structure) are needed to maintain high niche diversity and hence high species richness of characteristic heathland plants and animals.</p> <p>The structural character of the heathland feature is strongly influenced by the growing habits of its dominant species which in most cases will be ericoids (i.e. plants that look like heathers, including members of the Ericaceae and Empetraceae families). The ericaceous species heather or ling <i>Calluna vulgaris</i>, bell heather <i>Erica cinerea</i>, cross-leaved heath <i>Erica tetralix</i>, Dorset heath <i>Erica ciliaris</i>, Cornish heath <i>Erica vagans</i>, bilberry or blaeberry <i>Vaccinium myrtillus</i> and cowberry <i>Vaccinium vitis-idaea</i> are the commonest and most characteristic dwarf-shrubs. Hybrids of Dorset and cross-leaved heath and of bilberry and cowberry can be locally abundant. <i>Calluna</i> is usually the most abundant. Cowberry <i>Empetrum nigrum</i>, another common species in some coastal and transitional heaths, is not strictly ericaceous but is often treated as an ericoid species.</p> <p><b>Reason for restore:</b> in northern and eastern parts of the SAC the cover of dwarf shrubs are below the target though due to dense bracken and/or trees/scrub dominating in these areas.</p>	<p>NATURAL ENGLAND, 2010; 2011; 2012; 2013, 2014; 2015; 2016.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>
	<b>Vegetation composition: bracken cover</b>	<p>Reduce the cover of dense bracken across the H4030 European dry heath feature to a typically low level of between 1 - 10%.</p>	<p>The spread of bracken <i>Pteridium aquilinum</i> is a problem on many lowland heathlands. The unpalatable nature and density of bracken as a tall-herb fern, and its decomposing litter, can smother and shade out smaller and more characteristic heathland vegetation.</p> <p>Active management of bracken is usually required to reduce or contain its cover across this habitat feature. But this fern has also some nature conservation value, for example on sites where fritillary butterflies occur and utilise bracken litter habitat.</p>	<p>NATURAL ENGLAND, 2010; 2011; 2012; 2013, 2014; 2015; 2016.</p> <p>This attribute will be</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p><b>Reason for restore:</b> dense bracken cover across the whole dry heath feature at Cannock Chase is currently conservatively estimated (from 2016 aerial photography and site visits) at just over 10%.</p>	periodically monitored as part of Natural England's SSSI condition assessments.
Structure and function (including its typical species)	Vegetation structure: cover of gorse	Maintain the cover of common gorse <i>Ulex europaeus</i> at <25% and the combined cover of <i>U.europaeus</i> and <i>U.gallii</i> at <50% of the whole H4030 European dry heath feature.	<p>Gorse as a component of heathland is a very valuable wildlife habitat, and often a marker of relict heath and common. Both dense and spiny, it provides good, protected cover for many wildlife species: birds, mammals and reptiles; breeding habitat for rare or declining bird species, and excellent winter roosting.</p> <p>The flowers, borne at a time of year when other sources of pollen or nectar are in short supply, are particularly good for insects and other invertebrate pollinators. However gorse may cause problems if unchecked by dominating an area, eliminating other typical heathland species. Extensive mature stands may also be serious fire hazards.</p>	<p>NATURAL ENGLAND, 2010; 2011; 2012; 2013, 2014; 2015; 2016.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>
	Vegetation structure: tree cover	Restore the open character of the H4030 European dry heath feature, with a typically scattered and low cover of trees and scrub of between 5 - 15%.	<p>Scrub (mainly trees or tree saplings above 1 m in height) and isolated trees are usually very important in providing warmth, shelter, cover, food plants, perches, territorial markers and sources of prey for typical heathland invertebrates and vertebrates.</p> <p>But overall cover of scrub and trees across this habitat feature should be maintained or restored to a fairly sparse level, with a structurally complex edge and with characteristic heathland vegetation as ground cover. If scrub is locally important for any associated species with their own specific conservation objectives, then a higher level of cover will be acceptable. The area of scrub/tree cover should be stable or not increasing as a whole.</p> <p><b>Reason for restore:</b> although current tree and scrub cover across the whole dry heath feature is conservatively estimated (from 2016 aerial photography and site</p>	<p>NATURAL ENGLAND, 2010; 2011; 2012; 2013, 2014; 2015; 2016.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			visits) at nearly 13%, there are areas of potential heathland habitat will benefit from restoration by clearance of pine plantations at Moors Gorse and Brindley Heath. Across the dry heath feature there is a lack of beneficial young, scattered trees and scrub across the open heath in a form that is suitable for breeding nightjar, a strongly characteristic species of this feature.	assessments.
<b>Structure and function (including its typical species)</b>	<b>Vegetation structure: heather age structure</b>	Restore a diverse age structure amongst the ericaceous shrubs typically found across the H4030 European dry heath feature.	<p>Each phase of growth associated with the characteristic heathers which dominate this feature also represents different microclimatic conditions and microhabitats which may provide shelter or food to other organisms. Therefore, it is important to maintain a mosaic of heather in different phases of growth. Typically this age structure will consist of between 10-40% cover of (pseudo) pioneer heathers; 20-80% cover of building/mature heathers; &lt;30% cover of degenerate heathers and less than &lt;10% cover of dead heathers.</p> <p><b>Reason for restore:</b> there is an overall lack of pioneer heather across the dry heath feature. Most of the heather is in the building-mature stage, moving into degenerate stage.</p>	<p>NATURAL ENGLAND, 2010; 2011; 2012; 2013, 2014; 2015; 2016.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>
	<b>Vegetation: undesirable species</b>	<p>Restrict the cover of the following undesirable species across the H4030 European dry heath feature to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread:</p> <p>&lt; 1% cover of exotic species such as <i>Rhododendron ponticum</i>, <i>Gaultheria shallon</i>, <i>Fallopia japonica</i>. Exotic species should be eradicated if possible.</p> <p>Other species in this list may be beneficial for a range of invertebrates</p>	Undesirable non-woody and woody vascular plants species may require active management to avert an unwanted succession to a different and less desirable state. Often they may be indicative of a negative trend relating to another aspect of a site's structure and function. These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/acceptable components or even dominants.	<p>NATURAL ENGLAND, 2010; 2011; 2012; 2013, 2014; 2015; 2016.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p>and only become indicators of negative quality if they are over the established limit:</p> <p>&lt; 1 % cover of ragwort, nettle, thistles and other herbaceous species such as <i>Cirsium arvense</i>, <i>Digitalis purpurea</i>, <i>Epilobium</i> spp. (excluding <i>E. palustre</i>), <i>Chamerion angustifolium</i>, <i>Juncus effusus</i>, <i>J. squarrosus</i>, <i>Ranunculus</i> spp., <i>Senecio</i> spp., <i>Rumex obtusifolius</i>, <i>Urtica dioica</i>, coarse grasses.</p>		
<b>Structure and function (including its typical species)</b>	<b>Bare ground</b>	<p>Restore the cover of bare ground within the H4030 European dry heath feature to at least 1% but no more than 10% cover, consisting of at least 0.5% horizontal and 0.5% vertical bare ground.</p>	<p>Warm, dry, bare substrate close to or within heathland vegetation is important as basking, hunting, nesting and burrowing sites for certain plants, invertebrates, birds and amphibians strongly associated with dry heaths.</p> <p>Bare ground is defined here as soil (especially sandy, exposed soil in dry heaths and peaty soil besides open water in wet heaths) which is free of vegetation cover or litter and not subject to heavy and regular disturbance. It can be natural or man-made and should be firm, sun-lit, horizontal, sloping or vertical exposed bare ground.</p> <p><b>Reason for restore:</b> the latest condition assessments recorded insufficient bare ground across the feature. Edges of paths and tracks total just under 1% at most and therefore active management is needed to boost this micro-habitat resource across the dry heath feature.</p>	<p>NATURAL ENGLAND. 2014.</p> <p>NATURAL ENGLAND. 2013.</p> <p>NATURAL ENGLAND. 2010.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI condition assessments.</p>
	<b>Key structural, influential and/or site-distinctive species: flora and fauna</b>	<p>Restore the abundance of the species listed below to enable each of them to be a viable component of the H4030 European dry heath feature:</p> <p>Constant and preferential plant species of the H8 and H9 vegetation types.</p>	<p>See the Supporting/Explanatory Notes for this attribute above in table 1.</p> <p><b>Reason for restore:</b> the habitats on which most of these species rely are not currently in favourable condition. It is reasonable to expect that these species populations are not as robust as they might be. Across the SAC there are few large areas of uninterrupted or undisturbed habitat; for example the average area of habitat between paths/tracks is about 6ha. This can have implications for</p>	<p>JOY, J. 2014.</p> <p>LOWE, A., ROGERS, A.C. AND DURRANT, K.L. 2014.</p> <p>NATURAL</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p>Population of <i>Vaccinium intermedium</i>.</p> <p>Assemblage of heathland invertebrates associated with unshaded, early successional mosaics (such as solitary bees and wasps).</p> <p>Assemblage of heathland breeding birds, including Dartford warbler <i>Sylvia undata</i>, nightjar <i>Caprimulgus europaeus</i>, woodlark <i>Lullula arborea</i>.</p> <p>Assemblage of native reptiles: slow worm, common lizard, grass snake, adder.</p> <p>Population of Bog Bush Cricket <i>Metrioptera brachyptera</i>.</p>	<p>characteristic, ground-nesting heathland birds such as nightjar and woodlark (Lowe <i>et al.</i> 2014)</p>	<p>ENGLAND. 2014.</p> <p>NATURAL ENGLAND. 2014b.</p> <p>MORRIS, P. 2012.</p> <p>SHAW, S.C. 2010.</p> <p>GRUNDY, D. 2007.</p> <p>BENNETT, J.S. 2007.</p> <p>WEBB, J. R. &amp; JUKES, A. 2001.</p> <p>ENGLISH NATURE. 1987.</p>
<b>Structure and function (including its typical species)</b>	<b>Functional connectivity with wider landscape</b>	<p>Restore the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site.</p>	<p>This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives.</p> <p>These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are either important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site. These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely.</p> <p>In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p> <p><b>Reason for restore:</b></p>	<p>NOAKE, B. 2014.</p> <p>STAFFORDSHIRE WILDLIFE TRUST. 2013.</p> <p>NATURAL ENGLAND. 2013.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>A “restore” target has been set here for three reasons:</p> <ol style="list-style-type: none"> <li>1. Although good heathland corridors have been created on former Forest Enterprise commercial forestry land and managed by conservation grazing to connect formerly fragmented parts of the SAC, there may be opportunities to extend these and/or create new corridors of heathland/complimentary heathland habitats* to increase the functional connectivity with the SAC to allow the site to be as resilient as possible into the future.</li> <li>2. Surrounding the SAC is Cannock Forest, managed by Forest Enterprise for commercial timber production. The clear-fell management system has provided nightjar and woodlark with favourable nesting habitat, the continuity of which across the landscape is vital for the survival of the important populations of these rare birds in the Midlands.</li> <li>3. Outside the SAC, but in close proximity to it, are several, large, high quality heathlands that were once part of the former continuous tract of Cannock Chase stretching to Sutton Park (now SSSI and National Nature Reserve) in Birmingham. These are Gentleshaw Common SSSI, Hednesford Hills and Chasewater SSSIs along with Shoal Hill Common Local Wildlife Site and smaller areas of lowland heathland throughout the area. Although now discrete heathland areas, separated from the larger Cannock Chase SAC by forestry, intensive agriculture and peri-urban development, these heathlands provide a critical functional connection to Cannock Chase SAC therefore their continued conservation and enhancement is a priority as it supports the integrity of Cannock Chase SAC. This vital network of heathlands supports species which can disperse and range more widely such as birds and invertebrates, forming part of meta-populations that are important for genetic diversity and building resilience to cope with climate change. Restoring and/or creating new corridors of heathland/complimentary heathland habitats (such as acid grassland, scrub and oakwoods (alderwoods in wet areas) between the surviving heathlands is critical to securing the integrity of the SAC into the future</li> </ol>	
<b>Structure and function (including its typical species)</b>	<b>Adaptation and resilience</b>	Restore the H4030 European dry heath 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	CANNOCK CHASE SAC PARTNERSHIP. 2016.



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary.</p> <p>Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> <p><b>Reason for restore:</b> the vulnerability of Cannock Chase SAC overall to climate change has been assessed by Natural England as being <i>low</i>, taking into account the sensitivity, fragmentation, topography and management of its habitats. This means that this site is considered to be vulnerable overall but a lower priority for further assessment and action. A “restore” target has been set here because most of the land between the SAC and the other high quality heathlands in the local landscape is now urban development, intensive farming and forestry. To make the SAC and its typical species become more resilient in the face of climate change and other impacts and threats, we need to reconnect isolated heathland sites together. Where possible, land adjacent to existing heathland should be restored to lowland heathland and associated habitats such as acid grassland, scrub and oak-woods (alder-woods in wet areas).</p>	NATURAL ENGLAND. 2010; 2011; 2012; 2013; 2014; 2014b, 2015
<b>Structure and function (including its typical species)</b>	<b>Soils, substrate and nutrient cycling</b>	Restore the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal/bacterial ratio, to within typical values for the H4030 European dry heath habitat.	<p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.</p> <p><b>Reason for restore:</b> there is evidence to suggest that the soils at Cannock Chase are vulnerable to acidification.</p>	CEH. 2015.
<b>Supporting processes (on which the feature relies)</b>	<b>Conservation measures</b>	Restore the management measures within (and outside the site boundary where required) which are necessary to restore the structure, functions and	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site.</p> <p>Further details about the necessary conservation measures for this site can be</p>	STAFFORDSHIRE COUNTY COUNCIL. 2016.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		supporting processes associated with the H4030 European dry heath feature.	<p>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.</p> <p><b>Reason for restore:</b> continuing existing conservation management and new conservation grazing, subject to ongoing public consultation, will contribute hugely to achieving favourable conservation status of the dry heath feature by increasing nutrient removal from the heathland and improving functioning of the heathland ecosystem.</p> <p>The SAC Partnership will deliver the Strategic Access Management Measures required to mitigate for the increase in recreational impacts from new housing in the area, allowing the measures detailed in the structure and function and supporting processes sections of the Supplementary Advice to have maximum positive effect on the dry heath feature so improving its resilience into the future.</p> <p>Ongoing monitoring of and new research into the <i>Phytophthora pseudosyringae</i> infection in bilberry <i>Vaccinium myrtillus</i> is required to better understand its ecology for control and overall site management purposes.</p>	<p>NATURAL ENGLAND, 2010; 2011; 2012; 2013; 2014b.</p> <p>ENGLISH NATURE, 2005.</p>
<b>Supporting processes (on which the feature relies)</b>	<b>Air quality</b>	Restore the concentrations and deposition of air pollutants to within the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System ( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ).	<p>See the Supporting/Explanatory Notes for this attribute above in table 1.</p> <p><b>Reason for restore:</b> the Critical Loads and Levels are currently being exceeded at present and are a threat to the dry heath feature, causing enrichment and acidification of the soil beyond the expected pH for a lowland heathland soil.</p>	<p>CEH. 2015. More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool at <a href="http://www.apis.ac.uk">www.apis.ac.uk</a></p>

Attributes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Version Control</b> Advice last updated: 8 December 2017 – the supporting notes for the ‘functional connectivity’ attribute (point 3) have been amended			
<b>Variations from national feature-framework of integrity-guidance:</b> The following attributes are not relevant to this feature at this site: <ul style="list-style-type: none"> <li>• Supporting processes (on which the feature relies) – Water Quality</li> <li>• Supporting processes (on which the feature relies) – Hydrology</li> </ul>			

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# Site Improvement Plan

## Cannock Chase

Site Improvement Plans (SIPs) have been developed for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA). This work has been financially supported by LIFE, a financial instrument of the European Community.

The plan provides a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features. It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance.

The SIP consists of three parts: a Summary table, which sets out the priority Issues and Measures; a detailed Actions table, which sets out who needs to do what, when and how much it is estimated to cost; and a set of tables containing contextual information and links.

Once this current programme ends, it is anticipated that Natural England and others, working with landowners and managers, will all play a role in delivering the priority measures to improve the condition of the features on these sites.

The SIPs are based on Natural England's current evidence and knowledge. The SIPs are not legal documents, they are live documents that will be updated to reflect changes in our evidence/knowledge and as actions get underway. The information in the SIPs will be used to update England's contribution to the UK's Prioritised Action Framework (PAF).

The SIPs are not formal consultation documents, but if you have any comments about the SIP or would like more information please email us at [IPENSLIFEProject@naturalengland.org.uk](mailto:IPENSLIFEProject@naturalengland.org.uk), or contact Natural England's Responsible Officer for the site via our enquiry service 0300 060 3900, or [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk)

**This Site Improvement Plan covers the following Natura 2000 site(s)**

**UK0030107 Cannock Chase SAC**

## Site description

Cannock Chase is a large, diverse area of semi-natural vegetation comprising the most extensive area of lowland heathland in the Midlands with alder woodland, oak wood pasture and valley mires. It is home to breeding Nightjar, Woodlark, occasionally Dartford warbler and a diverse invertebrate fauna. The character of the vegetation is intermediate between the upland or northern heaths of England and Wales and those of southern counties.

Cannock Chase Special Area of Conservation is also a Country Park and lies in the heart of Cannock Chase Area of Outstanding Natural Beauty. Given its location it is a popular outdoor recreation destination and is subject to high visitor pressure. The Cannock Chase SAC Partnership has been set up to deliver robust access management measures to mitigate the negative effects of predicted future increases in recreational usage of the SAC. Current management of SAC land is targeted at restoring and strengthening the heathland vegetation mosaics.

## Plan Summary

*This table shows the prioritised issues for the site(s), the features they affect, the proposed measures to address the issues and the delivery bodies whose involvement is required to deliver the measures. The list of delivery bodies will include those who have agreed to the actions as well as those where discussions over their role in delivering the actions is on-going.*

Priority & Issue	Pressure or Threat	Feature(s) affected	Measure	Delivery Bodies
1 Undergrazing	Pressure	H4010 Wet heathland with cross-leaved heath, H4030 European dry heaths	Introduce grazing	Cannock Chase AONB, Forest Enterprise, Natural England, RSPB, Staffordshire County Council, Defence Infrastructure Organisation (DIO), CEMEX UK
2 Drainage	Pressure	H4010 Wet heathland with cross-leaved heath	Investigate the water supply to the wetland habitats in the Oldacre Valley, including the impact of the WW1 camp drainage system	Cannock Chase AONB, Environment Agency, Natural England, Staffordshire County Council, English Heritage
3 Hydrological changes	Pressure	H4010 Wet heathland with cross-leaved heath	Investigate the hydrology of the Sher Brook Valley and restore where possible	Environment Agency, Forest Enterprise, Natural England, Staffordshire County Council, UK Coal

4	Disease	Pressure	H4030 European dry heaths	Extend Phytophthora pseudosyringae monitoring to all Special Area of Conservation land to gather more data to aid understanding about the disease and long-term impacts	Defra, Forest Enterprise, Natural England, RSPB, Staffordshire County Council, Defence Infrastructure Organisation (DIO), University(ies), Food and Environment Research Agency (FERA), CEMEX UK
5	Air Pollution: impact of atmospheric nitrogen deposition	Pressure	H4010 Wet heathland with cross-leaved heath, H4030 European dry heaths	Control, reduce and ameliorate atmospheric nitrogen impacts on the whole of Cannock Chase SAC	Not yet determined
6	Wildfire/ arson	Pressure	H4010 Wet heathland with cross-leaved heath, H4030 European dry heaths	Update fire plans, review of the effectiveness of existing fire-breaks, and raise awareness with the public of the damage of accidental fires on heathland	Forest Enterprise, Natural England, RSPB, Staffordshire County Council, Defence Infrastructure Organisation (DIO), Staffordshire Fire and Rescue Service , CEMEX UK
7	Invasive species	Pressure	H4010 Wet heathland with cross-leaved heath, H4030 European dry heaths	Continue to monitor and control Invasive Non-Native Species (INNS)	Cannock Chase AONB, Forest Enterprise, Natural England, Staffordshire County Council, Defence Infrastructure Organisation (DIO), CEMEX UK



## Issues and Actions

This table outlines the prioritised issues that are currently impacting or threatening the condition of the features, and the outstanding actions required to address them. It also shows, where possible, the estimated cost of the action and the delivery bodies whose involvement will be required to implement the action. Lead delivery bodies will be responsible for coordinating the implementation of the action, but not necessarily funding it. Delivery partners will need to support the lead delivery body in implementing the action. In the process of developing the SIPs Natural England has approached the delivery bodies to seek agreement on the actions and their roles in delivering them, although in some cases these discussions have not yet been concluded. Other interested parties, including landowners and managers, will be involved as the detailed actions are agreed and delivered. Funding options are indicated as potential (but not necessarily agreed or secured) sources to fund the actions.

### 1 Undergrazing

Cannock Chase Special Area of Conservation needs conservation grazing by appropriate animals to build on the restoration of the dry and wet heathland habitats and address a number of management issues. Grazing animals such as cattle will diversify the physical structure of the heathland habitats by creating habitat mosaics across the site that in turn will benefit the special fauna at Cannock Chase. The presence of the plant fungal disease *Phytophthora pseudosyringae* on bilberry has stalled the reintroduction of grazing to the main body of the Chase due to time and resources being diverted to controlling this little-known disease but also due to concerns that grazing would spread the disease around the site. After five years of disease monitoring and treatment, we have a better understanding of the disease and how it moves around County land. It is now time to use and build on this research, and to build on the grazing research already carried out, to devise a grazing plan for Cannock Chase that will pose no greater risk to spreading the disease than the risk posed by people, dogs and deer.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
1A	Develop a conservation grazing plan for Staffordshire County Council SAC land with built-in biosecurity to minimise spread of <i>Phytophthora pseudosyringae</i> . Carry out public consultation on the plan in line with Commons Act legislation.	£60,000	2015-18	Non-Natural England funded site management plan	Not yet determined	Natural England	Cannock Chase AONB, Staffordshire County Council
1B	Implement the conservation grazing plan on Staffordshire County Council SAC land with built-in biosecurity to minimise spread of <i>Phytophthora pseudosyringae</i> .	Not yet determined	2018-25	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Not yet determined	Natural England	Cannock Chase AONB, Staffordshire County Council

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>1C</b>	Draw up and implement a conservation grazing plan for CEMEX SAC land. The RSPB will provide ongoing advisory and practical support for improved management and restoration of heathland in partnership with CEMEX at Cannock Chase.	Not yet determined	2015-20	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Not yet determined	Natural England	Cannock Chase AONB, RSPB, CEMEX UK
<b>1D</b>	Draw up and implement a conservation grazing plan for Forest Enterprise SAC land.	Not yet determined	2015-20	Major Landowner Group land ownership activities : Undertake Specific Management Works	Not yet determined	Natural England	Forest Enterprise
<b>1E</b>	Draw up and implement a conservation grazing plan for Ministry of Defence SAC land.	Not yet determined	2015-20	Major Landowner Group land ownership activities : Undertake Specific Management Works	Not yet determined	Natural England	Defence Infrastructure Organisation (DIO)

## 2 Drainage

The water supply to the wetland habitats needs further investigation and there are artificial, historic drainage structures in the Oldacre Valley that need to be assessed to establish their impact on the wetland vegetation.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>2A</b>	Investigate the extent and features of the World War 1 camp drainage system in Oldacre Valley.	£25,000	2015-17	Conservation Enhancement Scheme (CES)	Not yet determined	Natural England	Cannock Chase AONB, Staffordshire County Council, English Heritage
<b>2B</b>	Investigate the water supply to the wetland habitats in the Oldacre Valley including the effects of the World War 1 camp drainage system.	£50,000	2015-18	Conservation Enhancement Scheme (CES)	Not yet determined	Natural England	Environment Agency, Staffordshire County Council, English Heritage
<b>2C</b>	Restore to as natural as possible a functioning wetland system(s) in the Oldacre Valley while conserving the historic World War 1 features.	£30,000	2019-20	Habitat creation / restoration strategy: Habitat restoration	Conservation Enhancement Scheme (CES)	Natural England	Cannock Chase AONB, Environment Agency, Staffordshire County Council, English Heritage

## 3 Hydrological changes

There has been a reduction in the extent of the valley mire and changes in the vegetation in the Sher Brook Valley which indicate a move towards a drier wetland vegetation. Investigations are needed into why this is happening and what can be done to rectify it.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>3A</b>	Investigate the hydrology of the Sher Brook catchment to inform restoration options.	£50,000	2015-20	Investigation / Research / Monitoring	Defra, EU Life, Natural England	Natural England	Environment Agency, Forest Enterprise, Staffordshire County Council, UK Coal

## 4 Disease

The fungal plant disease *Phytophthora pseudosyringae* is widespread on several parts of the main body of the Chase, affecting bilberry, a major part of the heathland vegetation. Monitoring of disease spread has so far focussed on County land but there is a need to understand if and how the disease is spreading on the other parts of the Special Area of Conservation.

The disease outbreak on Cannock Chase is the worst in the country and with 5 years-worth of disease monitoring and treatment data on County land available, there is an opportunity to build on this evidence base to understand the disease in greater detail, its long-term effects on the vegetation composition of the Special Area of Conservation and devise an effective control plan to stop the spread of the disease. The results of this research should be incorporated into all current and future management plans for the site.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
<b>4A</b>	Continue with annual monitoring and control of <i>Phytophthora pseudosyringae</i> on Staffordshire County Council SAC land.	£60,000	2014-20	Conservation Enhancement Scheme (CES)	Not yet determined	Natural England	Staffordshire County Council
<b>4B</b>	Investigate hotspots of <i>Phytophthora pseudosyringae</i> infection on Staffordshire County Council SAC land to devise solutions for reducing the level of infection in these areas and spread to others.	£25,000	2015-20	Investigation / Research / Monitoring	Defra, EU Life, Natural England	Natural England	Defra, Staffordshire County Council, University(ies), Food and Environment Research Agency (FERA)
<b>4C</b>	Carry out monitoring of <i>Phytophthora pseudosyringae</i> on CEMEX SAC land to gather more data to aid understanding about the disease. The RSPB will provide ongoing advisory and practical support for improved management and restoration of heathland in partnership with CEMEX at Cannock Chase.	£12,000	2014-20	Conservation Enhancement Scheme (CES)	Not yet determined	Natural England	RSPB, CEMEX UK

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
4D	Carry out monitoring of <i>Phytophthora pseudosyringae</i> on Forest Enterprise SAC land to gather more data to aid understanding about the disease. Consider extending the monitoring to Forest Enterprise non-SAC land where bilberry is present to gather more data about how widespread the disease is across Cannock Chase.	£60,000	2014-20	Conservation Enhancement Scheme (CES)	Not yet determined	Natural England	Forest Enterprise
Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
4E	Carry out monitoring of <i>Phytophthora pseudosyringae</i> on Ministry of Defence SAC land to gather more data to aid understanding about the disease.	£1,500	2014-20	Conservation Enhancement Scheme (CES)	Not yet determined	Natural England	Defence Infrastructure Organisation (DIO)

## 5 Air Pollution: impact of atmospheric nitrogen deposition

Nitrogen deposition on Cannock Chase Special Area of Conservation currently exceeds the relevant critical loads for the site. Possible effects of this seen on the ground include an increase in bramble across the site and a shorter *Calluna vulgaris* lifecycle resulting in the plants ageing faster.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
5A	Control, reduce and ameliorate atmospheric nitrogen impacts on the whole of Cannock Chase SAC.	Not yet determined	2014-20	Site Nitrogen Action Plan	Not yet determined	Not yet determined	Not yet determined

## 6 Wildfire/ arson

Accidental and deliberate fires have caused massive damage to Cannock Chase over the decades. Ensuring that the existing fire break network is robust and restoration plans post-fire are in place will help areas recover quicker. Raising awareness with the public will reduce fires in the future.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>6A</b>	Review the existing fire break network and post-fire restoration plan for Staffordshire County Council SAC land, ensuring fire breaks do not damage or intercept springs or other sensitive features.	No costs, done in-house	2014-15	Existing Local Project	No net cost	Staffordshire County Council	Natural England, Staffordshire Fire and Rescue Service
<b>6B</b>	Review the existing fire break network and post-fire restoration plan for CEMEX SAC land at Rugeley Heath, ensuring fire breaks do not intercept or damage springs or other sensitive features. The RSPB will provide ongoing advisory and practical support for improved management and restoration of heathland in partnership with CEMEX at Cannock Chase.	No costs, done in-house	2014-15	Mechanism not identified / develop mechanism	No net cost	CEMEX UK	Natural England, RSPB, Staffordshire Fire and Rescue Service
<b>6C</b>	Review the existing fire break network and post-fire restoration plan for Forest Enterprise SAC land, ensuring fire breaks do not intercept or damage springs or other sensitive features.	No costs, done in-house	2014-15	Mechanism not identified / develop mechanism	No net cost	Forest Enterprise	Staffordshire Fire and Rescue Service

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>6D</b>	Review the existing fire break network and post-fire restoration plan for Ministry of Defence SAC land, ensuring fire breaks do not intercept or damage springs or other sensitive features.	No costs, done in-house	2014-15	Mechanism not identified / develop mechanism	No net cost	Defence Infrastructure Organisation (DIO)	Staffordshire Fire and Rescue Service

## 7 Invasive species

A range of invasive species are present on the SAC and on surrounding land. Monitoring and controlling the spread of certain aggressive species is vital to prevent damage to the dry and wet heath communities. Raising awareness with neighbouring landowners about the damage such species can cause and how they can help prevent the risk of spread of invasive species is needed too.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>7A</b>	Monitor and control all non-native invasive species on Staffordshire County Council SAC land.	No costs, done in-house	2014-20	Invasive Control Plan: Invasive Species Control Programme	No net cost	Staffordshire County Council	Cannock Chase AONB, Natural England
<b>7B</b>	Monitor and control all non-native invasive species on CEMEX SAC land at Rugeley Heath. The RSPB will provide ongoing advisory and practical support for improved management and restoration of heathland in partnership with CEMEX at Cannock Chase.	No costs, done in-house	2014-20	Invasive Control Plan: Invasive Species Control Programme	No net cost	CEMEX UK	Cannock Chase AONB, Natural England
<b>7C</b>	Monitor and control all non-native invasive species on Forest Enterprise SAC land.	No costs, done in-house	2014-20	Invasive Control Plan: Invasive Species Control Programme	No net cost	Forest Enterprise	Cannock Chase AONB, Natural England

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>7D</b>	Monitor and control all non-native invasive species on Ministry of Defence SAC land.	No costs, done in-house	2014-20	Invasive Control Plan: Invasive Species Control Programme	No net cost	Defence Infrastructure Organisation (DIO)	Cannock Chase AONB, Natural England



## Site details

The tables in this section contain site-relevant contextual information and links

### Qualifying features

#UK Special responsibility

<b>Cannock Chase SAC</b>	H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i>
	H4030 European dry heaths

### Site location and links

#### Cannock Chase SAC

Area (ha)	<b>1236.93</b>	Grid reference	<b>SJ982188</b>	<a href="#">Map link</a>
Local Authorities				Staffordshire
Site Conservation Objectives				<a href="#">European Site Conservation Objectives for Cannock Chase SAC</a>
European Marine Site conservation advice				<a href="#">n/a</a>
Regulation 33/35 Package				<a href="#">n/a</a>
Marine Management Organisation site plan				<a href="#">n/a</a>

## Water Framework Directive (WFD)

*The Water Framework Directive (WFD) provides the main framework for managing the water environment throughout Europe. Under the WFD a management plan must be developed for each river basin district. The River Basin Management Plans (RBMP) include a summary of the measures needed for water dependent Natura 2000 sites to meet their conservation objectives. For the second round of RBMPs, SIPs are being used to capture the priorities and new measures required for water dependent habitats on Natura 2000 sites. SIP actions for non-water dependent sites/habitats do not form part of the RBMPs and associated consultation.*

### **Cannock Chase SAC**

*River basin*

[Humber RBMP](#)

*WFD Management catchment*

Staffordshire Trent Valley

*WFD Waterbody ID (Cycle 2 draft)*

n/a

## Overlapping or adjacent protected sites

Site(s) of Special Scientific Interest (SSSI)	
Cannock Chase SAC	Cannock Chase SSSI

National Nature Reserve (NNR)	
Cannock Chase SAC	n/a

Ramsar	
Cannock Chase SAC	n/a

Special Areas of Conservation (SAC) and Special Protection Areas (SPA)	
Cannock Chase SAC	n/a

<i>Version</i>	<i>Date</i>	<i>Comment</i>
1.0	17/10/14	

[www.naturalengland.org.uk/ipens2000](http://www.naturalengland.org.uk/ipens2000)

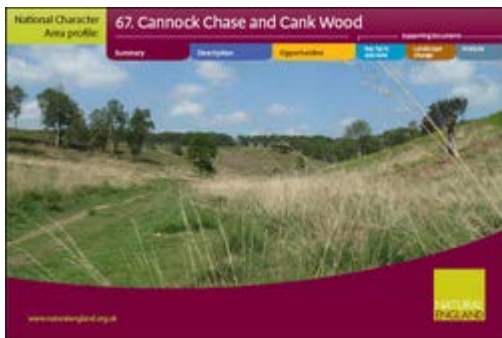


Environment  
Agency



# NCA Profile: 67 Cannock Chase and Cank Wood (NE347)

This record was published by Natural England on 22 August 2012.



Cannock Chase and Cank Wood National Character Area (NCA) extends north of the Birmingham and Black Country conurbation and includes a major area of this city. It is situated on higher land consisting of sandstone and the South Staffordshire Coalfield. The NCA principally coincides with the historical hunting forest of Cannock Chase, with major remnants surviving within the Cannock Chase Area of Outstanding Natural Beauty (AONB), which supports internationally important heathland Special Areas of Conservation (SAC) and the Sutton Park National Nature Reserve.



## Introduction

As part of Natural England's responsibilities as set out in the Natural Environment White Paper<sup>1</sup>, Biodiversity 2020<sup>2</sup> and the European Landscape Convention<sup>3</sup>, we are revising profiles for England's 159 National Character Areas (NCAs). These are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries, making them a good decision-making framework for the natural environment.

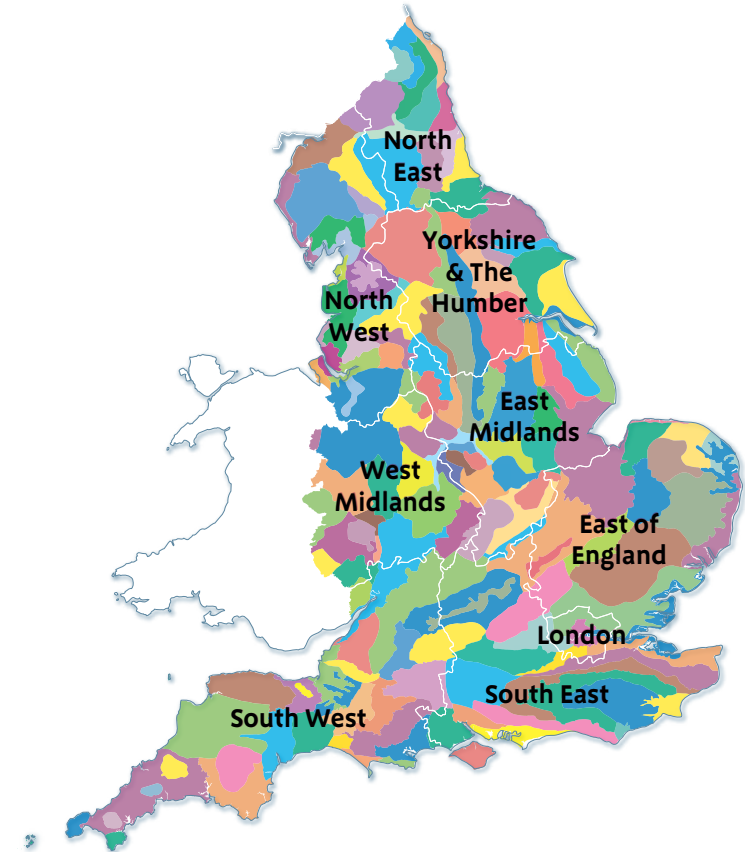
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and encourage broader partnership working through Local Nature Partnerships. The profiles will also help to inform choices about how land is managed and can change.

Each profile includes a description of the natural and cultural features that shape our landscapes, how the landscape has changed over time, the current key drivers for ongoing change, and a broad analysis of each area's characteristics and ecosystem services. Statements of Environmental Opportunity (SEOs) are suggested, which draw on this integrated information. The SEOs offer guidance on the critical issues, which could help to achieve sustainable growth and a more secure environmental future.

NCA profiles are working documents which draw on current evidence and knowledge. We will aim to refresh and update them periodically as new information becomes available to us.

We would like to hear how useful the NCA profiles are to you. You can contact the NCA team by emailing [ncaprofiles@naturalengland.org.uk](mailto:ncaprofiles@naturalengland.org.uk)

## National Character Areas map



<sup>1</sup> The Natural Choice: Securing the Value of Nature, Defra (2011; URL: [www.official-documents.gov.uk/document/cm80/8082/8082.pdf](http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf))

<sup>2</sup> Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services, Defra (2011; URL: [www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf](http://www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf))

<sup>3</sup> European Landscape Convention, Council of Europe (2000; URL: <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>)

## Summary

Cannock Chase and Cank Wood National Character Area (NCA) extends north of the Birmingham and Black Country conurbation and includes a major area of this city. It is situated on higher land consisting of sandstone and the South Staffordshire Coalfield. The NCA principally coincides with the historical hunting forest of Cannock Chase, with major remnants surviving within the Cannock Chase Area of Outstanding Natural Beauty (AONB), which supports internationally important heathland Special Areas of Conservation (SAC) and the Sutton Park National Nature Reserve.

There are no major rivers within the area, but canals are a significant feature and some major transport routes also cross the NCA. The current landscape is extremely varied, including extensive areas of urban development predominantly in the south of the NCA and extensive conifer plantations and heathlands in the north interspersed with farmland. The Forest of Mercia, a Community Forest, lies in the heart of the NCA. The NCA also has some outstanding geodiversity interest, extensive industrial archaeology and a good number of historic parks.

In addition to the ecosystem services of food and timber production, the NCA has an extensive rights of way network and areas of open access land offering good recreational opportunities to the surrounding population. Recreational use of the Cannock Chase SAC is of some concern and needs to be managed to ensure that future housing development does not harm the biodiversity interest of the site. Changes as a result of development have been significant within the NCA for many years and are likely to continue. This provides opportunities for enhancing both the landscape quality and biodiversity value through green infrastructure and through continued local initiatives such as the Forest of Mercia and the Cannock Chase AONB.

## Statements of Environmental Opportunity:

- **SEO 1:** Expand lowland heathland to increase habitat connectivity, improve resilience to climate change and improve water quality.
- **SEO 2:** Manage, enhance and expand the network of green infrastructure, such as woodlands, restored mining sites, parklands and canal routes, to increase biodiversity, access and recreational use and increase understanding of the area's rich industrial heritage, particularly geodiversity.
- **SEO 3:** Conserve and enhance the essential character of this varied landscape, which includes the Cannock Chase Area of Outstanding Natural Beauty, the Forest of Mercia and the urban conurbation of the Black Country, to maintain food and timber production where possible; enhance landscape, sense of place and tranquillity; and increase resilience to climate change.

Click map to enlarge; click again to reduce.



## Description

### Physical and functional links to other National Character Areas

The National Character Area (NCA) forms an area of higher ground rising out of Shropshire and Staffordshire Plain NCA to the west. Much of this western boundary is defined by the transport corridor of the M6. Needwood and South Derbyshire Claylands NCA lies to the north, separated by the Trent Valley.

The eastern edge adjoins Trent Valley Washlands NCA. The NCA lies on the watershed, with much of it draining east into the River Trent via the River Tame and a number of smaller tributaries that drain Cannock Chase. The remainder of the NCA drains west into the Severn catchment. In the south the NCA merges with Arden NCA within the Birmingham conurbation, and here there are close links through the roads, railways and canals.

From Cannock Chase there are views west over the Shropshire, Cheshire and Staffordshire Plain and to the north-east and east over the Claylands and the Trent Valley. To the north of the NCA the plantations and heathland of the Chase create prominent views within the area. In the south of the NCA there are also significant viewpoints at Turners Hill at Rowley Regis and at Barr Beacon east of Walsall.

### Distinct areas

- Cannock Chase
- Lichfield estate lands
- Black Country and Staffordshire Coalfield



View along the Dudley No.2 canal near Netherton, towards Cobb's Engine House with Rowley Hills in the distance.

## Key characteristics

- A varied landscape ranging from the open heathlands and plantations of Cannock Chase, through towns, reclaimed mining sites and new developments, to dense urban areas.
- The dominant rounded central plateau is mainly formed of the Coal Measures of the South Staffordshire Coalfield, with other prominent hills in the south at Wren's Nest, Castle Hill, Rowley Hills and Barr Beacon.
- Extensive coniferous plantations, woodlands and historic parklands occur across the NCA, even within the urban areas where they are predominantly small and include lots of young plantations.
- Away from the unenclosed landscape of Cannock Chase, fields generally have a regular pattern and are frequently enclosed by mature hedgerows with some hedgerow trees. Here farming is generally mixed with arable cultivation in large fields. Livery is concentrated around the flanks of the Chase.

Continued on next page...



Sherbrook Valley in Autumn.

## Key characteristics continued...

- Heathland and associated acid grassland were once much more extensive, although significant tracts still remain. Post-industrial sites and remnant countryside within the urban areas provide a mosaic of additional valuable habitats.
- The major rivers of the Trent and Tame lie adjacent to the NCA, both of which lie in broad flood plains. Streams and small rivers such as the Sow and the Penk drain radially from the higher ground into these rivers.
- The canal network is a notable feature and contributes significantly to the drainage of the urban areas.
- Industrial archaeology from the industrial revolution is a characteristic feature.
- The predominant building material of the 19th- and early 20th-century buildings is red brick, with more modern structures within the urban areas.
- The settlement pattern is complex and contrasting, with some areas densely populated and others relatively sparse. The conurbation includes a mosaic of urban areas, former industrial land and patches of farmland, with an extensive urban fringe.
- The extensive networks of canals and railways reflect the industrial history of the area. Major roads include the M6, the M6 Toll and the A5.

## Cannock Chase and Cank Wood today

Cannock Chase and Cank Wood NCA is a landscape dominated by its history as a former forest and chase and by the presence at its centre of the South Staffordshire Coalfield. The area has a varied landscape; plantations and heathlands in the north contrast strongly with the dense settlements of the south, interspersed with farmland. There are no major rivers within the NCA, but canals are a significant feature and this includes the supply reservoir at Chasewater. Cannock Chase Area of Outstanding Natural Beauty (AONB) lies to the north, and immediately south of this is the Forest of Mercia, a Community Forest, which extends into the conurbation. Major transport routes include the M6, the M6 Toll and the A5, and a series of railway lines influence the character of the area. There is a mixed pattern of village-based and dispersed settlement, with 19th- and 20th-century development having subsumed many small settlements.

Cannock Chase lies on a central elevated plateau. It is an unenclosed, heavily wooded landscape with a varied, often steeply sloping surface dominated by heathland and conifer plantations. The large area of plantation is complemented by broad tracts of heathland and there are long views, usually to wooded horizons but sometimes to lower ground, which emphasise its elevation. There is much local variety within the many valleys, known locally as slades. The wild character of the heaths, dotted with patches of pine and birch and dominated by heather and bracken, is a strong contrast with the surrounding cultivated ground and built-up areas. The wildness is emphasised by the small pockets of enclosed agricultural land within the heaths.



A new meadow created on a public open space near Wolverhampton. The green-winged orchid is one of a group of threatened plants dependent on infertile or nutrient poor grasslands.

Cannock Chase is an AONB and is heavily used for recreation due to its proximity to the Birmingham conurbation and its large country park. The AONB includes the Cannock Chase Special Area of Conservation (SAC), designated because it is the most extensive area of heathland in the Midlands. The character of the vegetation is intermediate between the upland or northern heaths of England and Wales and the heaths to the south. Within the heathland, a unique assemblage of species occurs, with many species that are at either the southern or the northern extent of their range, including species such as cowberry and crowberry, and the main British population of the hybrid bilberry, a plant of restricted occurrence. There are important populations of butterflies and beetles, as well as European nightjar and five species of bat<sup>4</sup>. The open

heathland provides a sense of tranquillity, as the Chase is largely devoid of settlements. Historic parks such as Beaudesert, Teddesley and Wolseley are a feature of the landscape lying around the edge of Cannock Chase.

To the west of Cannock Chase a gently undulating landscape is characterised by a regular enclosure pattern of low-hedged fields, intensively managed plantation woodlands and coverts and numerous small watercourses set within the narrow flood plains of the rivers Penk and Sow.

East of Cannock Chase and extending south is a landscape of villages and hamlets set within intensive arable farmland that becomes more steeply undulating and wooded in the area between Tamworth and Sutton Coldfield. The more rural parts around Chorley are mainly used for stock rearing, although livery is increasingly prevalent. Here, small- to medium-sized irregular fields and small woodlands dominate, with intact hedgerows lining sunken lanes. Historic parks such as Shugborough, Beaudesert, Teddesley and Wolseley are a feature. Lichfield is largely a Georgian brick-built city, with some earlier brick and timber-framed buildings, a Gothic stone cathedral and a medieval street pattern. Many listed buildings survive within the historic core and contribute to its character.

South of the Chase, the landscape is dominated by the settlements, tips, open cast sites, quarries and reclaimed areas within the coalfield, and the landscape and settlement pattern of the Black Country is complex. Many of the towns have a strong historic core, and some older buildings survive.

<sup>4</sup> SAC selection data, Joint Nature Conservation Committee  
(URL: <http://jncc.defra.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030107>)



View looking west from Wren's Nest NNR. Steeply dipping Silurian Limestone and a reef complex shown juxtaposed to high-density housing.

Some of the settlements such as Dudley, with its castle, wooded hill, medieval street plan and remaining Georgian buildings, have a strong sense of identity. Much of the area between the Chase and the Black Country conurbation has an urban fringe character, and settlements such as Cannock and Burntwood extend along the straight roads and field boundaries of 19th-century enclosure. Between the dense urban areas are small farms, patches of derelict land including disused quarries, and young woodlands, in addition to parks, golf courses and public open spaces. Small mature woods, pools and fragments of heathland are found and natural regeneration is common, contributing to a mosaic of valuable habitats.

A large area of heathland at Chasewater Country Park includes a large reservoir, which feeds the canal network to the south. The canal network here includes the Cannock Extension Canal, a short section of canal designated as an SAC due to its large population of floating water-plantain, which is at the eastern limit of the plant's natural distribution in England. Fens Pools SAC in Dudley, part of the Barrow Hill Local Nature Reserve (LNR), is a series of smaller pools that overlie Etruria Marls and Coal Measures of the Carboniferous Period. The site shows evidence of past industrial activities and includes a wide range of habitats, from open water, swamp, fen and wetland communities to unimproved neutral and acid grassland and scrub. Great crested newts occur as part of an important amphibian assemblage<sup>5</sup>. Other important open spaces include Sandwell Valley, the area around Barr Beacon, and Sutton Park National Nature Reserve (NNR) to the east within the suburban setting of Sutton Coldfield.

Rising above the plateau on which much of the Black Country lies are prominent small hills extending from south-west to north-east across the area. They include Rowley Regis, Turners Hill and Wren's Nest Hill. Forming prominent landmarks, they separate the core of the Black Country from the

strongly undulating landscape of the Stour valley. To the north of Birmingham and west of West Bromwich there are many more areas of open land, primarily in agricultural use but with a large historic park at Sutton Park and with fragments of heathland, such as Barr Beacon. There are medium-sized fields, generally with good-quality hedgerows, patches of ancient enclosure fields and areas of semi-natural vegetation including acid grassland, pools, fens and fragments of ancient woodland. Narrow, hedged lanes are often present and there is a real feeling of countryside despite the nearness of the built-up area.



**Dudley Castle, sited on a prominent outcrop of Silurian, Wenlock Limestone.**

<sup>5</sup> SAC selection data, Joint Nature Conservation Committee  
(URL: <http://jncc.defra.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030150>)

## The landscape through time

The central and higher parts of the NCA are comprised of rocks mostly of Carboniferous age, with the southern half traversed by a discontinuous ridge of hills. The Rowley Hills, composed of dolerite (an igneous rock intruded into the Coal Measures about 300 million years ago), lie at the centre of the ridge. To the north-west of the Rowley Hills, older limestone rocks of Silurian age form the steep-sided features of Castle Hill, Wren's Nest Hill and the high ground of Hurst Hill and Sedgley Beacon. Much of this area forms the exposed section of the South Staffordshire Coalfield and is covered by poorly drained heavy soils derived from glacial till.



Rowley Hills Local Geological Site. Unmanaged grassland, part of a mosaic of habitats in this former dolerite quarry.

Surrounding the coalfield are rocks of the Sherwood Sandstone Group of Early Triassic age. The sediments derived from the sandstones infilled ancient rift valleys east and west of the coalfield, historically forming wide desert basins that today form the gently rolling landform interspersed – where pebble beds predominate – by long, usually well-wooded ridges and hilly areas such as Cannock Chase and Barr Beacon. Cannock Chase is underpinned by the pebble beds of the Kidderminster Formation, which give rise to well-drained soils forming an important aquifer and to fertile, easily worked soils. Locally, the Bromsgrove Formation sandstones have been used as a building stone for churches and walls.

This area once formed the eastern fringe of the area settled by an ancient Celtic people called the Cornavii<sup>6</sup>. Prehistoric evidence of human settlement includes bronze-age barrows on Cannock Chase, the iron-age hill fort of Castle Ring and a number of other sites. The majority of the area would have been extensive woodland and marshland. It is likely that the woodland was managed and utilised for grazing, with small-scale clearance commencing in the late prehistoric period.

The main evidence for Roman occupation can be found at Wall (Letocetum), an important military staging post and posting station near to the Roman roads of Watling Street and Ryknild (Icknield) Street.

<sup>6</sup> *The Cornovii*, Graham Webster (1991)

After the Norman conquest the area was declared a royal forest and would have been dominated by open woodland interspersed with grazed areas and some farmland and settlements. Cannock Chase was carved out of this royal forest and granted to the Bishop of Lichfield in 1290. The city of Lichfield has its origins in the 7th century, and Cannock and Rugeley both developed as local market towns in the late 12th century.

Piecemeal clearance and colonisation of the land continued throughout the medieval period, particularly around the settlements and small hamlets. These were frequently associated with industrial activities such as quarrying, mining, edge-tool manufacture and transport. By the mid-1600s the landscape had become more open, with more extensive heathland, due to timber extraction to produce charcoal for the local iron furnaces. Woodland, however, remained within the medieval deer parks of Beaudesert, Haywood, Teddesley, Wolseley and Sutton and on higher ground.

A large-scale programme of enclosure occurred between the 1770s and 1880s, although some areas remain unenclosed to the present day. The 18th and 19th centuries also saw the layout of more formal parks, notably Shugborough, and the intensification of arable farming and horticulture on sandstone-derived soils on the fringes of the growing urban areas of the Black Country and dairying on the heavy, poorly drained soils in the northern part of the area.

During the 17th century the Black Country and south Staffordshire rapidly developed into one of the country's largest centres for mining and quarrying of coal, iron and Silurian limestone as well as for manufacturing. The arrival of the canals in the late 18th and early 19th

centuries sparked a further rise in activity. Individual towns came to specialise in the manufacture of particular goods; examples are locks in Willenhall and leather goods in Walsall. By the 1850s much of the coal had been worked out in the Black Country, and significant areas of land were reclaimed for industrial and residential use. The mining of coal moved north to Cannock, Burntwood and Hednesford in the 19th century, where large-scale mining of the concealed measures beneath led to the rapid expansion of these settlements. Sutton Coldfield developed as a dormitory suburb for Birmingham.

During the early part of the 20th century, Cannock Chase was used for military training and, from 1921 onwards, planting of conifers on the heath began. The designation of the Cannock Chase AONB in 1958 protected it from excessive development and it now provides a very popular recreational resource.

Recent developments include the expansion of residential settlements and industrial estates; reclamation of former mines and spoil tips; open cast mining; sand, gravel and clay extraction; waste disposal; and road developments – all of which are changing the character of the area. Ex-industrial mining sites now provide important bat hibernacula and educational and recreational opportunities. The construction of the M6 Toll has increased the opportunities for further land use changes. In many areas around the NCA, farming is now giving way to livery – particularly around the fringes of settlements.



## Ecosystem services

The Cannock Chase and Cank Wood NCA provides a wide range of benefits to society. Each is derived from the attributes and processes (both natural and cultural features) within the area. These benefits are known collectively as 'ecosystem services'. The predominant services are summarised below. Further information on ecosystem services provided in the Cannock Chase and Cank Wood NCA is contained in the 'Analysis' section of this document.

### Provisioning services (food, fibre and water supply)

- **Food provision:** A producer of store lambs and suckler calves with some beef and dairying. The soils in the area are predominantly light and free draining (Grades 3 and 4). Mixed farming occupies some 32 per cent of the NCA, with dairying and livestock prevalent in some parts and arable production to the south and east of Lichfield.
- **Timber provision:** Sections of low-grade soils in the NCA (generally of marginal agricultural use) support commercial forestry. The Forestry Commission estate at Cannock Chase covers approximately 2,500 ha and is managed for commercial timber production, recreation and biodiversity.
- **Water availability:** Most of the NCA overlays a major sandstone aquifer, which is at risk of over-abstraction mainly to provide water for public water supply and industry. There are few major rivers in this NCA, but the southern half of the NCA is crossed by an extensive network of canals comprising most of the Birmingham Canal Navigations (BCN) network. The 108-hectare Chasewater Reservoir, which lies in the middle of this NCA, has a capacity of 4.5 million cubic metres and is used to supply

essential water to maintain levels in the canal network<sup>7</sup>. In the north of the NCA (between Cannock, Rugeley and Stafford), surface water sources have 'no water available' and groundwater sources are 'over-licensed'<sup>8</sup>, while in the middle of the NCA, approximately between Cannock and Tamworth, surface and groundwater sources are over-abstracted. The River Stour runs for a short length through the southern corner of the NCA. This is over-abstracted and receives effluent discharges from sewage treatment works that maintain flows at an artificially high level.



Canals provide the blue infrastructure in the Black Country and contribute to the local tourist economy.

<sup>7</sup> Chasewater Dam blog, Lichfield District Council (accessed October 2010; URL: [www2.lichfielddc.gov.uk/chasewaterdam/](http://www2.lichfielddc.gov.uk/chasewaterdam/))

<sup>8</sup> *The Staffordshire Trent Valley Catchment Abstraction Management Strategy*, Environment Agency (July 2007)

### Regulating services (water purification, air quality maintenance and climate regulation)

- **Climate regulation:** The NCA supports significant areas of lowland heathland (2,368 ha), which are underlain by soils with a carbon content of 20–50 per cent, providing a significant carbon storage function. In addition the extensive area of woodland (8,823 ha) also contributes significantly to regulating climate locally.
- **Regulating water quality:** Natural regulating processes of the NCA provide services which ensure that most surface waterbodies are of a good or moderate quality, including those of an artificial or modified nature such as canals, which in this NCA are particularly important. The chemical status of surface waterbodies is generally classed as 'good', although there is one length of river/canal in the south-east of the NCA which is classed as 'failing to achieve good' status. Several water bodies, in particular in the south around Birmingham, fail standards for specific pollutant concentrations. Groundwater chemical status is 'poor' across the majority of the NCA.
- **Regulating water flow:** Infiltration into the permeable soils and underlying sandstone geology within this NCA generally help to reduce surface water run-off within rural areas and reduce the risk of flooding. The main areas of flood risk are within the Wolverhampton and Birmingham conurbation, where the channel capacity of the River Tame and its tributaries is insufficient due to the constraint imposed by built development.
- **Pollination:** Significant areas of the NCA support semi-natural vegetation, particularly heathland and grassland (4,000 ha), which provide important nectar sources for pollinating insects that have the potential to support local agriculture.

### Cultural services (inspiration, education and wellbeing)

- **Recreation:** The NCA has significant recreational and potential health benefits, provided through a large network of rights of way (totalling 797 km), significant areas of open access land (covering 2,193 ha) and the Cannock Chase AONB, which offers a major focus for visitors and recreation – particularly within the Cannock Chase Country Park and adjoining forestry. Within the conurbation, formal public parks, open spaces such as those along river corridors and canals, and major areas of green spaces (such as Sandwell Valley, Barr Beacon, Wren's Nest and Sutton Park NNR) provide opportunities for recreation, as well as potential health benefits. Examples of educational benefits include the Wren's Nest 'Ripples Through Time' initiative. The access network within the NCA is particularly important in allowing links to the wider countryside from the urban areas, particularly into the urban fringe and the Forest of Mercia Community Forest.
- **Tranquillity:** Much of the Chase is associated with tranquillity<sup>9</sup>, offering an antidote to the largely urban surroundings of the area. This feeling is further accentuated by wooded reclaimed coal tips and areas of historic wooded deer parks and small-scale intimate pastoral landscapes to the east.
- **Sense of history:** Aspects of the historic environment most evident to the general public are the canal network, the clearly distinct settlements of Dudley, the cathedral city of Lichfield and the many industrial buildings that have survived regeneration. There is a wealth of industrial heritage within the NCA, reflecting the area's mining and industrial past related to

<sup>9</sup> AONB unit, personal communication

the industrial revolution. Many country houses are evident, built upon the wealth created by the industrial revolution; notable houses and parkland at Beaudesert, Teddesley, Wolseley and Shugborough Hall all ring Cannock Chase. The history of Cannock Chase and Sutton Park, both relic of the former larger Cannock Chase hunting forest<sup>10</sup>, also provide opportunities for historical interpretation of land use changes within the NCA.

- **Biodiversity:** There are three internationally designated habitats in the NCA, all of which are SACs: Cannock Chase (the lowland heathland described above), Fens Pools and the Cannock Extension Canal. There are 23 Sites of Special Scientific Interest (SSSI) in the NCA, totalling 4 per cent of the NCA area. The NCA supports significant areas of important semi-natural habitat (a total of 7 per cent of the NCA area is a Biodiversity Action Plan (BAP) priority habitat). This includes lowland heathland at Cannock Chase (2,368 ha), a site designated as an SAC because it is the most extensive area of this habitat in the Midlands<sup>11</sup>.

Other important habitats within the northern part of the NCA include a range of grassland habitats, woodlands and flood plain grazing marsh. There are a number of historic parks within the NCA such as Shugborough, Beaudesert, Teddesley and Wolseley. Brocton Coppice, which is part of Cannock Chase, is an important wood pasture site that adds significantly to the resource of veteran trees within the NCA.

Within the urban conurbation in the south of the NCA, a wide range of habitats of high biodiversity value still exist, with important clusters of sites and open green space. These include Pelsall North Common (Walsall), Sandwell Valley (Sandwell) and the Fens Pools area including the SAC (Dudley)<sup>12</sup>.



*"In no part of England are more geological features brought together in a small compass than in the environs of Dudley or in which their characters have been more successfully developed by the labours of practical men."* Spoken by Sir Roderick Murchison in his inaugural address to the Dudley Geological Society at the Dudley Hotel in 1842.

- **Geodiversity:** Geodiversity within the NCA contributes greatly to its sense of place and history through local topography, with sites such as Wren's Nest NNR, Barrow Hill LNR and the geotrail on Cannock Chase all providing important resources for tourism, education and recreation – as does the mining heritage of the area.

<sup>10</sup> *A History of Birmingham Places & Placenames ... From A to Y*, William Dargue (URL: <http://billdargue.jimdo.com/placenames-gazetteer-a-to-y/places-s/sutton-park/>)

<sup>11</sup> SAC selection data, Joint Nature Conservation Committee (URL: <http://jncc.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0030107>)

<sup>12</sup> *Birmingham and Black Country Biodiversity Action Plan*, The Wildlife Trust (2010)

## Statements of Environmental Opportunity

### SEO 1: Expand lowland heathland to increase habitat connectivity, improve resilience to climate change and improve water quality.

#### For example, by:

- Maintaining the current extent of heathland and improving its management, for example by grazing, to increase biodiversity value.
- Planning the restoration of areas of former heathland and expanding the extent of heathland to improve filtration of clean water to the underlying aquifer, and improving habitat connectivity to increase resilience to climate change.
- Conserving and increasing the extent of habitats associated with heathland, such as acid grassland, to enhance the biodiversity value.
- Protecting below-ground archaeological deposits and upstanding features such as bronze-age barrows, iron-age hill forts, ridge and furrow and the military camps on Cannock Chase.
- Investigating ways of securing better management of designated heritage assets, which contribute to landscape character – particularly those that have been identified as ‘heritage at risk’.

**SEO 2: Manage, enhance and expand the network of green infrastructure, such as woodlands, restored mining sites, parklands and canal routes, to increase biodiversity, access and recreational use and increase understanding of the area's rich industrial heritage, particularly geodiversity.**

**For example, by:**

- Reinforcing and expanding the existing green infrastructure network of open spaces, parks, farmland and countryside, woods, wetlands, reclaimed sites and access routes throughout the Black Country, the wider urban area, the adjoining urban fringe and in and around the freestanding towns.
- Taking advantage of opportunities to enhance educational access, particularly to nationally important geodiversity sites.
- Conserving and managing the outstanding geodiversity interest, particularly at the area's eight geological Sites of Special Scientific Interest (SSSI) and within the Black Country, and identifying opportunities to enhance the geodiversity resource linked so closely to the area's cultural heritage.
- Retaining and enhancing the biodiversity value of urban areas, and expanding and improving habitat connectivity.
- Increasing the extent of native woodland and managing existing woodlands, for example as a source of wood fuel, to improve landscape, increase recreational opportunities, increase carbon storage for climate regulation and improve water filtration to the underlying aquifer for water quality.
- Creating new wetlands, enhancing existing watercourses and ensuring public access to these features as part of sustainable urban drainage systems in urban areas and close to new developments.
- Managing and expanding access to the networks of rights of way, cycle routes, canal towpaths and access land and enhancing recreational opportunities.
- Maintaining and improving the existing rights of way network and the Staffordshire Way, Heart of England Way and Beacon Way long-distance routes.
- Planning new or improved links between urban areas and the wider countryside or major open spaces within or near the conurbation such as Sandwell Valley, Barr Beacon, Sutton Park and Chasewater.
- Improving access to a wider range of local sites so as to reduce recreational pressure at sensitive locations.
- Improving links to or within the wider network of canal towpaths and cycle routes.
- Conserving the industrial archaeology of the Black Country and the South Staffordshire Coalfield, particularly buildings and sites associated with the iron, manufacturing and mining industries, and the canal network, and promoting access and awareness.
- Protecting and managing historic parks and urban parks to conserve significant historic landscapes and important features and habitats such as veteran trees, wood pasture and urban trees and the associated invertebrate populations.

**SEO 3: Conserve and enhance the essential character of this varied landscape, which includes the Cannock Chase Area of Outstanding Natural Beauty, the Forest of Mercia and the urban conurbation of the Black Country, to maintain food and timber production where possible; enhance landscape, sense of place and tranquillity; and increase resilience to climate change.**

**For example, by:**

- Protecting and managing the Cannock Chase Area of Outstanding Natural Beauty (AONB), to maintain its special qualities as a protected landscape, working within the framework of the AONB Management Plan.
- Conserving and enhancing the distinctive unenclosed landscape of the AONB to retain the sense of wildness and tranquillity.
- Supporting the continued provision of forestry and agriculture within the area as appropriate, and ensuring they are sustainably managed to bring benefits for carbon sequestration and biodiversity networks.
- Protecting and managing the historic and cultural heritage of the area to further its conservation and promote access and understanding.
- Protecting and appropriately managing the mixed landscape of fields, woodlands and unenclosed land found outside the urban areas to retain the historic contrast between different areas, enhance landscape character, improve biodiversity and maintain food production.
- Retaining the mixed land use pattern of pasture, arable and woodland, and conserving and restoring landscape character, particularly in urban fringe areas.
- Maintaining and enhancing the distinctive enclosure patterns to conserve the historical record of regular enclosure to the west, irregular small- to medium-sized fields between Cannock Chase and Lichfield, and 19th-century enclosure around the mining settlements.
- Planting new hedgerows, hedgerow trees and associated grassland buffer strips to restore landscape character and improve habitat connectivity, particularly where this can assist in regulating soil erosion.
- Managing hedgerows in traditional local style to enhance landscape character and improve biodiversity value.
- Conserving ridge and furrow and other archaeological features.

## Supporting document 1: Key facts and data

Total area: 72,790 ha

### 1. Landscape and nature conservation designations

Some 6,617 ha (9 per cent) of the Cannock Chase Area of Outstanding Natural Beauty (AONB) falls within the NCA.

Management Plans for the protected landscape(s) can be found at:

- [www.cannock-chase.co.uk](http://www.cannock-chase.co.uk)

Source: Natural England (2011) Cannock Chase AONB Management Plan

#### 1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Name	Area (ha)	Percentage of NCA
International	Ramsar	n/a	0	0
European	Special Protection Area (SPA)	n/a	0	0
	Special Area of Conservation (SAC)	Cannock Chase SAC; Fen Pools SAC; Cannock Chase Extension Canal SAC	1,268	2
National	National Nature Reserve (NNR)	Sutton Park NNR; Wren's Nest NNR	845	1
	Site of Special Scientific Interest (SSSI)	A total of 23 sites wholly or partly within the NCA	2,590	16

Source: Natural England (2011)

Please note: (i) Designated areas may overlap (ii) all figures are cut to Mean High Water Line, designations that span coastal areas/views below this line will not be included.

There are 527 local sites in Cannock Chase and Cank Wood NCA covering 4,697 ha, which is 5 per cent of the NCA.

Source: Natural England (2011)

- Details of individual Sites of Special Scientific Interest can be searched at: <http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm>
- Details of Local Nature Reserves (LNR) can be searched at: [http://www.lnr.naturalengland.org.uk/Special/lnr/lnr\\_search.asp](http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp)
- Maps showing locations of statutory sites can be found at: <http://magic.defra.gov.uk> – select ‘Designations/Land-Based Designations/Statutory’

## 1.2 Condition of designated sites

SSSI condition category	Area (ha)	Percentage of SSSI in category condition
Unfavourable declining	7	<1
Favourable	466	18
Unfavourable no change	41	2
Unfavourable recovering	2,031	78

Source: Natural England (March 2011)

- Details of SSSI condition can be searched at: <http://www.sssi.naturalengland.org.uk/Special/sssi/reportIndex.cfm>

## 2. Landform, geology and soils

### 2.1 Elevation

Elevation ranges from 57 m above sea level to a maximum of 271 m. The highest point is at Turners Hill, Rowley Regis.

Source: Natural England (2010)

### 2.2 Landform and process

Prominent hills in the NCA include the Silurian Limestone hills of the Wren’s Nest and Castle Hill in Dudley and the Carboniferous dolerite of the of the Rowley Hills surrounded by the Carboniferous Staffordshire Coalfield.

Source: Cannock Chase and Cank Wood Character Area Description; Geological Narrative West Midlands Geodiversity Partnership

### 2.3 Bedrock geology

The landscape of the central core is mainly formed of the Coal Measures of the South Staffordshire Coalfield. The highest elevation is found in the prominent north-north-west-south-south-east Rowley-Sedgley ridge formed of dolerite and the hills of the Silurian limestone inliers of Dudley. Triassic rocks outcrop around the north and east of the coalfield, with the harder sandstones of the Kidderminster formation giving rise to the higher ground of Cannock Chase AONB and Barr Beacon.

Source: Geological Narrative West Midlands Geodiversity Partnership



## 2.4 Superficial deposits

Thick glacial till and glacio-fluvial sands and gravels cover much of the bedrock north of Wolverhampton. Strewn boulders (erratics), characteristic of the area north of Wolverhampton to Walsall, denote the maximum advance of the Devensian Stage ice sheet. Deposits have been widely exploited for aggregates over the last 200 years.

Source: Geological Narrative West Midlands Geodiversity Partnership

## 2.5 Designated geological sites

Tier	Designation	Number
National	Geological Site of Special Scientific Interest (SSSI)	8
National	Mixed Interest SSSI	0
Local	Local Geological Sites	6

Man-made sections – including disused quarries and road, rail and canal cuttings – are of critical importance to the geological understanding of the NCA. For example, the Wren’s Nest NNR, in the heart of Dudley, comprises a network of disused limestone quarries and underground workings. The NNR is internationally important for both the sequence of Silurian Limestone and its extremely diverse and well-preserved fossil fauna.

Source: Natural England (2011)

*\*Local sites are non statutory designations*

- Details of individual Sites of Special Scientific Interest can be searched at: <http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm>

## 2.6 Soils and Agricultural Land Classification

Much of the central coalfield area is covered by glacial till of varying thickness which gives rise to poorly drained soils originally covered by heathland. There are extensive coniferous plantations on Cannock Chase itself and significant areas are affected by active or reclaimed minerals sites. On the good sandstone-derived soils at the eastern and western edges, there is substantial arable cultivation.

Source: Cannock Chase and Cank Wood Character Area Description

The main grades of agricultural land in the NCA are broken down as follows (as a proportion of total land area).

Agricultural Land Classification	Area (ha)	Percentage of NCA
Grade 1	0	0
Grade 2	6,695	9
Grade 3	24,277	33
Grade 4	4,186	6
Grade 5	0	0
Non-agricultural	8,759	12
Urban	28,873	40

Source: Natural England (2010)

Maps showing locations of sites can be found at: <http://magic.defra.gov.uk> – select ‘Landscape’ (shows ALC and 27 types of soils).

### 3. Key waterbodies and catchments

#### 3.1 Major rivers/canals

The following major rivers/canals (by length) have been identified in this NCA.

Name	Length in NCA (km)
River Tame	16
River Sow	7
River Stour	4
River Penk	3

Source: Natural England (2010)

**Please note: other significant rivers (by volume) may also occur. These are not listed where the length within the NCA is short.**

The major rivers in the immediate area are the Trent and the Tame, both of which lie in broad floodplains to the north and east of the NCA itself. Streams drain radially from the high ground around Cannock Chase to the surrounding rivers of the Penk, Sow and Trent. Further east and south, the higher ground drains through various tributaries to the Tame. The vast majority of the NCA lies within the Trent part of the Humber Catchment; a small part around Dudley in the south-west is within the Severn Catchment. The canal network is a notable feature of the NCA, and contributes significantly to the drainage of the urban areas. Apart from the extensive network in Birmingham and the Black Country, the Staffordshire and Worcestershire Canal and Coventry Canal both provide links to the Trent and Mersey Canal which runs along the Trent Valley.

#### 3.2 Water quality

The total area of nitrate vulnerable zone (NVZ) is 72,791 ha, 100 per cent of the NCA.

Source: Natural England (2010)

#### 3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies at:

[http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=\\_e](http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e)

### 4. Trees and woodlands

#### 4.1 Total woodland cover

This NCA contains 8,823 ha of woodland (where woods are over 2 ha in size), including 940 ha of ancient woodland. Forestry plantations and woods over 2 ha in size cover 9 per cent of the NCA. Some 21,844 ha (30 per cent) of the NCA is within the Forest of Mercia Community Forest; 90 per cent of the forest area is within this NCA.

Source: Natural England (2010)

#### 4.2 Distribution and size of woodland and trees in the landscape

There are extensive coniferous plantations on Cannock Chase, interspersed with pockets of sessile oak and birch, with alder on the damper soils and beech along the edges of roads and forestry compartments. Brocton Coppice is an area of national importance. In the surrounding landscapes, there is a mixture of ancient, plantation and secondary woodlands. Historic parks such as Beaudesert, Teddesley, Shugborough and Wolseley contain significant areas of woodland and veteran trees. Sutton Park includes areas of oak/holly/rowan woodland of national importance. The urban areas are characterised by many small woodlands and, since 1990, there has been quite extensive new planting through the Forest of Mercia and Black Country Urban Forest initiatives.

Source: Cannock Chase and Cank Wood Character Area Description

### 4.3 Woodland types

A statistical breakdown of the area and type of woodland found across the NCA is detailed below.

Area and proportion of different woodland types in the NCA (over 2 ha):

Woodland type	Area (ha)	Percentage of NCA
Broadleaved	5,143	7
Coniferous	2,409	3
Mixed	193	<1
Other	1,078	<1

Source: Forestry Commission (2012)

Area and proportion of ancient woodland and planted ancient woodland sites (PAWS) within the NCA:

Woodland type	Area (ha)	Percentage of NCA
Ancient semi-natural woodland	557	1
Planted ancient woodland sites (PAWS)	384	<1

Source: Natural England (2004)

## 5. Boundary features and patterns

### 5.1 Boundary features

Mature hedgerows (including some species-rich hedgerows) with hedgerow trees are a feature of much of the farmland across this NCA. There has been deterioration through over-cutting and neglect, particularly in arable areas. Ha-has and woodland belts are features of the historic parks. Wire fences and thin or gapped hedges are associated with land on the urban fringe, particularly where horse grazing predominates and where land has been reclaimed from past minerals working.

Source: Cannock Chase and Cank Wood Countryside Character Area Description; Countryside Quality Counts (2003)

### 5.2 Field patterns

The central area of Cannock Chase is an unenclosed landscape of open heathland and woodland. On the western fringes of the Chase, there is a regular field pattern of low-hedged fields reflecting enclosure in the 18th and 19th centuries. To the east of the Chase, and around Lichfield, the landscape shows a mix of regular and irregular field patterns, reflecting different historical enclosure periods – some medieval, some 18th- and 19th-century planned enclosure, as well as arable areas where fields have been amalgamated in the 20th century. In the southern part of the NCA, in the Black Country and Staffordshire Coalfield, fields are of a smaller size and the pattern of enclosure is more irregular.

Source: Cannock Chase and Cank Wood Countryside Character Area Description; Countryside Quality Counts (2003)

## 6. Agriculture

The following data has been taken from the Agricultural Census linked to this NCA.

### 6.1 Farm type

The area's mixed farming character is reflected in the breakdown of farm types: 84 grazing livestock holdings (21 per cent); 81 cereal farms (20 per cent); 43 general cropping farms (11 per cent). Farms classified as 'other' (which will include smallholdings) number 128 (31 per cent). Trends between 2000 and 2009 show a decrease in the total number of holdings from 456 (an 11 per cent decrease). Trends also show a significant increase in cereal farms (up from 64 – an increase of 27 per cent) and decreases in grazing and dairy farms.

Source: Agricultural Census, Defra (2010)

### 6.2 Farm size

Farms of 5–20 ha are the most common, accounting for 33 per cent of holdings, followed by farms of 20–50 ha, accounting for 23 per cent of holdings. Trends between 2000 and 2009 show a small decrease in the number of all farm sizes, except for holdings over 100 ha. This category totals 69 as it did in 2000 but now makes up 17 per cent of the total, up from 15 per cent in 2000.

Source: Agricultural Census, Defra (2010)

### 6.3 Farm ownership

Some 72 per cent of the total farmed area is owner occupied.

Source: Agricultural Census, Defra (2010)

### 6.4 Land use

The dominant land use is grassland, accounting for 10,659 ha (45 per cent of farmed area). This is followed by cereals (7,104 ha or 30 per cent and oilseeds (1,960 ha or 8 per cent). Between 2000 and 2009, there was a slight increase in the area of grassland and a slight decrease in the area of cereals.

Source: Agricultural Census, Defra (2010)

### 6.5 Livestock numbers

Sheep are the most numerous livestock type (a total of 15,300 animals) followed by cattle (12,700) and pigs (6,100). In every case there has been a significant decrease in overall numbers between 2000 and 2009.

Source: Agricultural Census, Defra (2010)

### 6.6 Farm labour

The figures suggest that the majority of holdings are run by dedicated farmers or managers. These comprise some 45 per cent of the total workforce. The total workforce increased by 16 per cent between 2000 (1,151) and 2009 (1,333). This increase is accounted for solely by an increase in the number of casual workers, by 172 per cent. Other numbers have remained similar but there are fewer holders and managers.

Source: Agricultural Census, Defra (2010)

Please note: (i) Some of the Census data are estimated by Defra so may not present a precise assessment of agriculture within this area (ii) Data refers to commercial holdings only (iii) Data includes land outside of the NCA where it belongs to holdings whose centre point is recorded as being within the NCA.

## 7. Key habitats and species

### 7.1 Habitat distribution/coverage

Internationally important heathland habitats are found on Cannock Chase. Extensive lowland heathland was once a characteristic of this NCA and relic areas occur across the NCA, even within the urban areas, with nationally important heathland sites for example at Chasewater and Sutton Park. The remaining areas of heathland and acid grassland are floristically distinct from the heathlands of southern England and represent a transition between lowland and upland heath; here, the open heathland habitats grade into semi-natural woodland and, on Cannock Chase, conifer plantations. The complex range of habitats supports a wide range of species which include nationally rare hybrid bilberry and nationally rare birds such as nightjar and woodlark and a rich and important invertebrate community. Significant habitats exist within the urban areas and the urban fringe. There are often remnants of ancient habitats, such as species-rich marshy grassland, ancient woodland and heathland. Post-industrial sites have also provided a diverse range of habitats, which include important wetlands such as Fens Pools and Clayhanger.

Source: Midland Plateau Natural Area Profile

### 7.2 Priority habitats

The Government's new strategy for biodiversity in England, Biodiversity 2020, replaces the previous Biodiversity Action Plan (BAP) led approach. Priority habitats and species are identified in Biodiversity 2020, but references to BAP priority habitats and species, and previous national targets have been removed. Biodiversity Action Plans remain a useful source of guidance and information. More information about Biodiversity 2020 can be found at: [www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx](http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx)

The NCA contains the following areas of mapped priority habitats (as mapped by National Inventories). Footnotes denote local/expert interpretation. This will be used to inform future national inventory updates.

Priority habitat	Area (ha)	Percentage of NCA
Broad-leaved mixed & yew woodland (broad habitat)	2,680	4
Lowland heathland	1,375	2
Coastal and floodplain grazing marsh	394	<1
Lowland meadows	240	<1
Lowland dry acid grassland	105	<1
Purple moor grass and rush pasture	21	<1
Fens	44	<1
Reedbeds	8	<1
Lowland calcareous grassland	1	<1

Source: Natural England (2011)

- Maps showing locations of priority habitats are available at: <http://magic.defra.gov.uk> – Select 'Habitats and Species/Habitats'

### 7.3 Key species and assemblages of species

- Maps showing locations of some key species are available at: <http://magic.defra.gov.uk> – Select 'Habitats and Species/Habitats'
- Maps showing locations of S41 species are available at: <http://data.nbn.org.uk/>

## 8. Settlement and development patterns

### 8.1 Settlement pattern

The northern part of the NCA is dominated by Cannock Chase, a former hunting forest that is largely devoid of settlement. Around the periphery of the Chase, Cannock and Rugeley developed as market centres from the late 12th century. The cathedral city of Lichfield has its origins in the 7th century, and the present cathedral dates in part from the 12th century. Urban expansion continues, particularly in the vicinity of the M6 toll road. The southern part of the NCA covers much of the Black Country and part of Birmingham. Coal, iron and manufacturing industries developed at many different centres, and there is a complex pattern of dispersed towns and villages which tend to sprawl; yet there are significant areas of captured countryside within these. Originally, there was a mixed pattern of village-based and dispersed settlement, with 19th- and 20th-century urban development having subsumed many small settlements. Very small or small- to medium-scale farmsteads were dominant across the centre of the area, with areas of large-scale and very large-scale farmsteads concentrated to the east and the west.

**Source: Cannock Chase and Cank Wood Countryside Character Area Description; Countryside Quality Counts (2003)**

### 8.2 Main settlements

The total estimated population for this NCA (derived from Office for National Statistics (ONS) 2001 Census data) is 1,173,217; much of this is concentrated within the conurbation, but the populations of the significant freestanding towns are: Cannock (pop. 65,000); Lichfield (pop. 28,400); Rugeley (pop. 22,700); and Burntwood (pop. 22,200).

**Source: ONS Census data (2001); Cannock Chase and Cank Wood Countryside Character Area Description; Countryside Quality Counts (2003); Natural England (2012)**

### 8.3 Local vernacular and building materials

The predominant building material of the 19th-century and early 20th-century buildings is brick, usually red, with Welsh slate roofs. There are some timber-framed buildings of medieval to 17th century date. Sandstone was used for some of the more important buildings, particularly churches. Furnace slag was used locally as a material for walls.

**Source: Cannock Chase and Cank Wood Countryside Character Area Description; Countryside Quality Counts (2003)**

## 9. Key historic sites and features

### 9.1 Origin of historic features

Evidence for legible prehistoric activity is limited, apart from bronze-age barrows on Cannock Chase and the iron-age hill fort of Castle Ring. Commencement of woodland clearance resulted in heathland. Ryknild Street and Watling Street cross the NCA, but the only upstanding evidence of Roman occupation is at Wall. Cannock Forest covered most of the NCA in the 11th to early 14th centuries. The Chase was granted to the Bishop of Lichfield in 1290 as a private hunting forest. Continuing woodland clearance had left the high plateau of Cannock Chase as mainly heathland by the mid 17th century. Sutton Park was a medieval deer park and contains extensive, well-preserved archaeological remains of deer park management. Much of it is a Registered Park and a Scheduled Monument. Historic parks are a feature, and often incorporate historic deer parks and large, planned estate farms. Shugborough Park is an 18th-century designed landscape. A complex range of industrial archaeological features (particularly in the Black Country) including an extensive canal network constructed during the late 18th and early 19th centuries are notable. Cannock Chase was used extensively for military activity from the early 20th century, with large training camps in both world wars now surviving only in template form as roads.

**Source: Countryside Quality Counts Draft Historic Profile;  
Cannock Chase and Cank Wood Countryside Character Area Description**

### 9.2 Designated historic assets

This NCA contains the following numbers of designated heritage assets:

- 13 Registered Parks and Gardens covering 1,402 ha.
- 1 Registered Battlefield.
- 42 Scheduled Monuments.
- 1,336 Listed Buildings.

**Source: Natural England (2010)**

- More information is available at the following address:

<http://www.english-heritage.org.uk/caring/heritage-at-risk/>

<http://www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england/>

## 10. Recreation and access

### 10.1 Public access

- 9 ha of the NCA's 6,561 ha are classified as being publicly accessible.
- There are 798 km of public rights of way at a density of 1.1 km per km<sup>2</sup>.
- There are no National Trails but two long-distance footpaths, the Heart of England Way and the Way for the Millennium, running through the NCA.

Sources: Natural England (2010)

The following table shows the breakdown of land which is publically accessible in perpetuity:

Access designation	Area (ha)	Percentage of NCA
National Trust (Accessible all year)	n/a	0
Common Land	1,630	2
Country Parks	2,629	4
CROW Access Land (Section 4 and 16)	3,986	5
CROW Section 15	393	1
Village Greens	12	<1
Doorstep Greens	7	<1
Forestry Commission Walkers Welcome Grants	1,046	1
Local Nature Reserves (LNRs)	978	1
Millennium Greens	0.1	<1
Accessible National Nature Reserves (NNRs)	845	1
Agri-environment Scheme Access	7	<1
Woods for People	3,687	5

Sources: Natural England (2011)

Please note: Common Land refers to land included in the 1965 commons register; CROW = Countryside and Rights of Way Act 2000; OC and RCL = Open Country and Registered Common Land.



## 11. Experiential qualities

### 11.1 Tranquillity

Based on the Campaign to Protect Rural England (CPRE) map of tranquillity (2006), the highest scores for tranquillity are on Cannock Chase, within the AONB. The lowest scores for tranquillity are at all the towns and within the Black Country conurbation. The majority of this NCA falls within areas considered to be least tranquil.

A breakdown of tranquillity values for this NCA are detailed in the table below:

Tranquillity	Score
Highest value within NCA	41
Lowest value within NCA	-121
Mean value within NCA	-43

Sources: CPRE (2006)

- More information is available at the following address:  
<http://www.cpre.org.uk/resources/countryside/tranquil-places>

### 11.2 Intrusion

The 2007 intrusion map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that the undisturbed areas are confined to the Cannock Chase AONB. A breakdown of intrusion values for this NCA is detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	48	60	54	+6
Undisturbed	17	5	3	-14
Urban	35	35	43	+8

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are a significant decrease of 14 percentage points in the proportion of undisturbed or intruded land, matched by increases in urban and disturbed land.

- More information is available at the following address:  
[www.cpre.org.uk/resources/countryside/tranquil-places](http://www.cpre.org.uk/resources/countryside/tranquil-places)

## 12. Data sources

- British Geological Survey (2006)
- Natural Area Profiles, Natural England (published by English Nature 1993-1998)
- Countryside Character Descriptions, Natural England (regional volumes published by Countryside Commission/Countryside Agency 1998/1999)
- Joint Character Area GIS boundaries, Natural England (data created 2001)
- National Parks and AONBs GIS boundaries, Natural England (2006)
- Heritage Coast Boundaries, Natural England (2006)
- Agricultural Census June Survey, Defra (2000,2009)
- National Inventory of Woodland & Trees, Forestry Commission (2003)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)\*
- Ancient Woodland Inventory, Natural England (2003)
- BAP Priority Habitats GIS data, Natural England (March 2011)
- Special Areas of Conservation data, Natural England (data accessed in March 2011)
- Special Protection Areas data, Natural England (data accessed in March 2011)
- Ramsar sites data, Natural England (data accessed in March 2011)
- Sites of Special Scientific Interest, Natural England (data accessed in March 2011)
- Detailed River Network, Environment Agency (2008)
- Source protection zones, Environment Agency (2005)
- Registered Common Land GIS data, Natural England (2004)
- Open Country GIS data, Natural England (2004)
- Public Rights of Way Density, Defra (2011)
- National Trails, Natural England (2006)
- National Tranquillity Mapping data, CPRE (2007)
- Intrusion map data, CPRE (2007)
- Registered Battlefields, English Heritage (2005)
- Record of Scheduled Monuments, English Heritage (2006)
- Registered Parks and Gardens, English Heritage (2006)
- World Heritage Sites, English Heritage (2006)
- Incorporates Historic Landscape Characterisation and work for preliminary Historic Farmstead Character Statements (English Heritage/Countryside Agency 2006)

Please note all figures contained within the report have been rounded to the nearest unit. For this reason proportion figures will not (in all) cases add up to 100 per cent. The convention <1 has been used to denote values less than a whole unit.

## Supporting document 2: Landscape change

### Recent changes and trends

#### Trees and woodlands

- Woodland covers 12 per cent of this NCA and is a significant feature in the landscape with a total of 5,143 ha of broadleaved woodland (woods over 2 ha), including 940 ha of ancient woodland plus a further 2,409 ha of coniferous plantations. The Forest of Mercia Community Forest covers some 30 per cent of this NCA. It supports many significant areas of woodland, and also provides an opportunity for further woodland expansion.
- For the period covered by the Countryside Quality Counts (CQC) data from 1990 to 2003, the proportion of ancient woodland sites covered by Woodland Grant Scheme agreements went up from 14 to 21 per cent. The total woodland stock increased by 4 per cent with approved new planting under Woodland Grant Scheme agreements (267 ha) indicating that the woodland character of the NCA has been strengthened and woodland cover increased. Significant contributions were made during this period within the Forest of Mercia and throughout the Black Country by various urban forest initiatives.

#### Boundary features

- Hedges show a mixed picture with new planting and improved management in some areas such as within the Forest of Mercia but deterioration through neglect and over-cutting in others, particularly in areas where there are concentrations of arable farming and livery. Only about 4 per cent of field boundaries (hedges) were covered by Countryside Stewardship agreements

between 1999 and 2003. There has however, been some woodland planting in the form of shelter belts, which affords some strengthening of character through Countryside Stewardship Schemes and the Woodland Grant Scheme during the same period.

- The introduction of Environmental Stewardship in 2005 has led to an increase in positive environmental management of boundary features including; fencing (43 km), hedge management (14 km), hedge planting and restoration (29 km), restored boundary protection (28 km) up to 2009.

#### Agriculture

- The dominant land use in this NCA is grassland, accounting for 10,659 ha (45 per cent of farmed area). This is followed by cereals (7,104 ha or 30 per cent) and oilseeds (1,960 ha or 8 per cent).
- Agricultural character continues to change with changing pasture management, arable conversion and an increasing use for livery. Between 2000 and 2009 there was a slight increase in the area of grassland and a slight decrease in the area of cereals.
- Mixed farming pattern has continued but between 2000 and 2009 there has been a decrease in the total number of holdings and a progressive loss of larger, economically active units. There has also been a significant decrease in overall livestock numbers.

## Settlement and development

- The settlement character of the area continues to be transformed with significant expansion of the urban fringe into the area around Cannock, Lichfield, Burntwood and Norton Canes. Development pressures continue to transform many parts of the area with the completion of the M6 Toll Road and potential changes to the rail network bringing further significant landscape change.
- In places, large scale quarrying of aggregates (some within AONB and many around the flank of it) continue to be worked.
- Within the urban areas there is a great deal of brownfield land, which is subject to continued development pressure resulting in future potential changes in the landscape.

## Semi-natural habitat

- The NCA supports substantial areas of heathland, some of the most northerly in England with a significant quantity of this resource within SSSI, mainly at Cannock Chase SAC, with other fragments at Shoal Hill, Gentleshaw, Sutton Park and Chasewater.
- Overall the extent of priority BAP habitats across the NCA are focussed outside the conurbation but even within the urban areas there are some important areas rich in wildlife. Some 2,590 ha (just over 3 per cent) of the NCA is designated as SSSI, most (78 per cent) of which requires more continued management to bring it into favourable condition.
- In addition to the extent of SSSI there are 527 locally designated sites covering an additional 4,697 ha (5.2 per cent of the NCA).

## Historic features

This NCA has the following historic designations: 13 Registered Parks and Gardens covering 1,402 ha, the Registered Battlefield of Hopton Heath (1643), 42 Scheduled Monuments and 1,336 Listed Buildings.

- Evidence for legible prehistoric activity within the NCA is somewhat limited, apart from bronze-age barrows on Cannock Chase and the iron-age hill fort of Castle Ring supporting significant Celtic/pre Christian and bronze-age archaeology.
- Ryknild Street and Watling Street cross the NCA, but the only upstanding evidence of Roman occupation is at Wall.
- Close to Lichfield is the location of the 'Staffordshire Hoard', the largest hoard of Anglo-Saxon gold and silver metalware yet discovered in the United Kingdom.
- Cannock Forest covered most of the NCA in the 11th to early 14th centuries. The Chase was granted to the Bishop of Lichfield in 1290 as a private hunting forest. Continuing woodland clearance had left the high plateau of Cannock Chase as mainly heathland by the mid 17th century. Sutton Park was a medieval deer park and contains extensive well-preserved archaeological remains of deer park management. Much of it is a Registered Park, and a Scheduled Monument. Historic Parks are a feature, and often incorporate historic deer parks and large planned estate farms. Shugborough Park is an 18th century designed landscape.
- Lichfield supports historic streets with over 230 listed buildings, many from the 14th and 15th century, with part of the Cathedral dating back to 1195 and with its

3 spires is unique amid Europe. Lichfield was the seat of the ancient kingdom of Mercia developed by St Chad in 669. It was a thriving coaching city in the 18th century when it was also the home of many famous people including Samuel Johnson, David Garrick and Erasmus Darwin and Anna Seward.

- The NCA supports a complex range of industrial archaeological features particularly in the Black Country, with places like Smethwick being of international importance as the cradle of the Industrial Revolution, and an extensive canal network constructed during the late 18th and early 19th centuries are notable.
- Cannock Chase was used extensively for military activity from the early 20th century, with large training camps in both world wars with the road network of the camp layout still existing.

## Rivers

- The aquifer underlies much of the area, and abstraction levels are above those needed to achieve 'good status' in line with the Water Framework Directive. In particular the rivers Stour and Sow are over-abstracted. The main rivers that lie within the NCA include the River Tame (16 km), River Sow (7 km), River Stour (4 km) and River Penk (3 km).

## Minerals

- Thick glacial till and glacio-fluvial sands and gravels cover much of the bedrock of the NCA north of Wolverhampton and these deposits have been widely exploited for aggregates over last 200 years.

- Rowley Rag which is the igneous dolerite intrusion (intruded about 300 million years ago), makes up the Rowley Hills. The area has been and still is quarried for dolerite, which is mainly used as an aggregate and road stone.
- The central core of the NCA is mainly formed of the Coal Measures of the South Staffordshire Coalfield which has seen extensive exploitation in the past with recent significant land reclamation. The ex-colliery waste and mineral sites are now often restored to open heathland.

## Drivers of change

### Climate change

- The fragmentation of heathland and other habitats within the NCA increases the risk of species extinction and exacerbates the problems for sustainable management.
- Climate trends suggest increased rainfall, periods of drought, and more frequent storm events.
- Over-abstraction of the aquifer is already an issue and may become a greater problem with hotter and drier summers.
- A changing climate, in particular summer droughts, is likely to increase the vulnerability of the iconic ancient oak woodland and heathland, with veteran trees increasingly vulnerable to damage, pest and disease. Heathland which represent a transitional form with distinct flora, and has significant carbon storage, will become more vulnerable to bracken incursion, drought and fire.

- Sandy acid soils may be more vulnerable to damage such as increased erosion through wind-blow and run-off, along with nutrient loss and decreased soil microbial activity.
- Increased demand for renewable energy installations and cropping.
- Increased risk of localised flooding.
- Agricultural change with the potential for new crops.

## Other key drivers

- Continuing development pressure in and around the conurbation and the towns of Stafford, Cannock, Burntwood and Lichfield; the Black Country and Stafford are areas previously identified for growth.
- Further landscape change in the corridor of the M6 Toll Road, with new services and industrial development concentrated around junctions, with consequent landscape impact.
- New developments provide opportunities to ensure a high standard of design and a contribution to green infrastructure, building upon the network of sites in the Black Country and the urban fringe.
- The area is likely to remain attractive for recreation, with good access to nature along with opportunities for environmental education and understanding our heritage; this is both a challenge and an opportunity.

- The need for food security will result in continued agricultural production, along with changing farming practices, which may impact on ecological habitats, networks and species, as well as landscape character including increase in horse pasture, particularly in urban fringe areas. Agri-environment schemes provide opportunities to work with land managers to incorporate farmland habitats, develop networks of linked habitats and enhance the rural character of the landscape.
- Increased agricultural production may impact on the quality of the soils and will need careful management.
- Continued demand for sand and clay from existing quarries and for waste disposal provides opportunities for restoration of sites back to amenity or nature conservation use.
- Increased demand for recreational facilities around the edge of the conurbation with opportunities to reduce travelling by locating facilities close to urban areas.
- Increased recreational pressures at Cannock Chase due to planned residential development; presenting management challenges alongside opportunities such as the Environmental Stewardship scheme.
- Plant health issues at Cannock Chase, and potentially beyond, such as the Phytophthora outbreaks which threatens the flora, particularly the ancient oaks and bilberry.

- Major opportunity for heathland restoration, expansion and development of better ecological networks in the area within and south of Cannock Chase working in partnership with the AONB and Forest of Mercia.
- The Forest of Mercia and Black Country Urban Forest initiatives have left a legacy of young woodlands that will need to be managed. There is potential for more woodland planting in the urban fringe. This is both a challenge and an opportunity, with potential for wood fuel.
- Potential for biomass production and renewable energy installations with attendant wider benefits and local impacts to be reconciled.
- Challenges in securing new uses for historic buildings in areas experiencing major structural change in the economy; and in securing a sustainable future for the surviving stock of historic farm buildings.
- Challenge to identify and protect important habitats on previously developed land.
- Urban areas within the NCA provide potential for public engagement, for example Ripples Through Time.

## Supporting document 3: Analysis supporting Statements of Environmental Opportunity

The following analysis section focuses on a selection of the key provisioning, regulating and cultural ecosystem goods and services for this NCA. These are underpinned by supporting services such as photosynthesis, nutrient cycling, soil formation and evapo-transpiration. Supporting services perform an essential role in ensuring the availability of all ecosystem services.

Biodiversity and geodiversity are crucial in supporting the full range of ecosystem services provided by this landscape. Wildlife and geologically-rich landscapes are also of cultural value and are included in this section of the analysis. This analysis shows the projected impact of Statements of Environmental Opportunity on the value of nominated ecosystem services within this landscape.



View looking south-east from Rowley Hills Local Geological Site into the neighbouring Arden NCA.



Statement of Environmental Opportunity	Ecosystem service																			
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass energy	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity	
<b>SEO 1:</b> Expand lowland heathland to increase habitat connectivity, improve resilience to climate change and improve water quality.	↘ *	↘ *	↗ **	n/a	↗ *	↗ *	↑ **	↗ *	↑ **	↗ **	↗ *	↗ *	n/a	↑ **	↑ **	↑ **	↑ **	↑ **	↑ **	○
<b>SEO 2:</b> Manage, enhance and expand the network of green infrastructure such as woodlands, restored mining sites, parklands and canal routes to increase biodiversity, access and recreational use and increase understanding of the area's rich industrial heritage, particularly geodiversity.	↘ *	↑ ***	↗ **	n/a	↗ **	↑ **	↗ **	↗ *	↗ **	↗ ***	↑ ***	↗ *	n/a	↑ **	↗ *	↗ **	↑ ***	↑ **	↑ **	↗ *

Note: Arrows shown in the table above indicate anticipated effect on service delivery: ↑ = Increase ↗ = Slight Increase ↔ = No change ↘ = Slight Decrease ↓ = Decrease. Asterisks denote confidence in projection (\*low \*\*medium\*\*\*high) ○ symbol denotes where insufficient information on the likely effect is available.

Dark plum = national importance; mid plum = regional importance; light plum = local importance

Statement of Environmental Opportunity	Ecosystem service																		
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass energy	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
<b>SEO 3:</b> Conserve and enhance the essential character of this varied landscape, which includes the Cannock Chase Area of Outstanding Natural Beauty, the Forest of Mercia and the urban conurbation of the Black Country, to maintain food and timber production where possible, enhance landscape, sense of place and tranquillity and increase resilience for climate change.	↔ *	↗ **	↗ **	n/a	↗ *	↗ *	↗ *	↗ *	↗ **	↗ **	↗ *	↗ *		↑ **	↑ **	↗ *	↑ ***	↑ **	○

Note: Arrows shown in the table above indicate anticipated effect on service delivery: ↑ = Increase ↗ = Slight Increase ↔ = No change ↘ = Slight Decrease ↓ = Decrease. Asterisks denote confidence in projection (\*low \*\*medium\*\*\*high) ○ symbol denotes where insufficient information on the likely effect is available.

Dark plum = national importance; mid plum = regional importance; light plum = local importance

## Landscape attributes

Landscape attribute	Justification for selection
A very varied landscape that forms part of the larger 'midlands plateau' and including distinctive areas of higher ground that provide extensive views.	<ul style="list-style-type: none"> <li>■ The landscape ranges from the wild and open Cannock Chase, to productive agricultural land, through freestanding towns and an extensive urban fringe to dense urban areas.</li> <li>■ The underlying character appears throughout the urban fringe and the Black Country as heathland, small woods and fragments of farmland.</li> <li>■ There are extensive views from parts of Cannock Chase and viewpoints within the urban area include Turners Hill, Castle Hill, Wren's Nest Hill, Sedgeley Beacon and Barr Beacon.</li> </ul>
Outstanding geodiversity interest.	<ul style="list-style-type: none"> <li>■ The Wren's Nest NNR contains limestone rocks with an exceptionally well preserved fossil fauna. The exploration of this site played a significant role in the development of the science of geology.</li> <li>■ There are 8 geological SSSI with a range of different features; and a significant number of local geodiversity sites.</li> <li>■ There is a legacy of past mining and quarrying related to the area's industrial development, such as the limestone caverns in Dudley.</li> </ul>
The Cannock Chase Area of Outstanding Natural Beauty is a varied landscape of open heathland and woodland that provides a sense of wildness and tranquillity.	<ul style="list-style-type: none"> <li>■ An Area of Outstanding Natural Beauty since 1958, subject to an AONB Management Plan implemented by a local partnership.</li> <li>■ It is a largely unenclosed landscape with little settlement or habitation, but used extensively for recreation; a 2000 survey estimated the number of visitors at 1.5 m per annum.</li> <li>■ It contains a variety of important habitats including lowland heathland and commercial forestry plantations, with a significant proportion designated as a SAC.</li> <li>■ Historic features include Castle Ring Fort, upstanding evidence for ancient hollow ways and historic land management principally in the form of banks and ditches, and military sites associated with training during the two world wars.</li> <li>■ The sense of wildness and tranquillity is reinforced by the wildlife which includes deer, birds such as nightjar, bats and a range of amphibians and reptiles.</li> </ul>

Landscape attribute	Justification for selection
<p>Distinct field boundary patterns with regular enclosure to the west of Cannock Chase, areas of small- to medium-sized fields of irregular pattern between the Chase and Lichfield, and the straight field boundaries of 19th century enclosure around the mining settlements south of the Chase.</p>	<ul style="list-style-type: none"> <li>■ The different patterns reflect the different periods of enclosure and illustrate the varied history of the area.</li> <li>■ There is also a strong contrast with the largely unenclosed landscape of Cannock Chase. Remnant countryside and farmland within the Black Country also shows similar variation.</li> <li>■ The hedgerows are characteristic of the midlands consisting mainly of hawthorn with hedgerow trees, and are important as landscape features and for biodiversity value; but condition and management vary with many in poor condition.</li> </ul>
<p>The distinctive settlement pattern of the Black Country and parts of Birmingham with dense urban areas interspersed with remnant countryside, farmland, woods and reclaimed land that forms a network of habitats and open spaces that spreads into the surrounding urban fringe.</p>	<ul style="list-style-type: none"> <li>■ The settlement pattern reflects the industrial and mining history with towns specialising in particular trades and surrounding land exploited for minerals and then re-used for other purposes.</li> <li>■ There are significant 'green wedges' and large open areas such as Sandwell Valley, the area around Barr Beacon and Sutton Park that provide a real feeling of countryside.</li> <li>■ Small woods, pools and sites that have been reclaimed or have regenerated naturally form a mosaic of valuable habitats. There are a number of SSSI and the Cannock Extension Canal and Fens Pool are SAC; and the wider canal network is an important habitat for water floating plantain and freshwater crayfish.</li> <li>■ Much of the urban fringe is Green Belt, and is home to a range of agricultural, recreational and quarrying activities.</li> </ul>

Landscape attribute	Justification for selection
<p>Diverse woodlands and plantations that vary in size and type including commercial coniferous plantations, ancient woodland, wet woodland and many small woods and young plantations.</p>	<ul style="list-style-type: none"> <li>■ Overall woodland cover of 12 per cent which is probably an underestimate given the number of small woods under 2 ha in size and many new plantations.</li> <li>■ Coniferous plantations on Cannock Chase and nearby provide commercial woodland and recreation. Management and different height/age structures contribute to biodiversity, for example, value for ground-nesting birds.</li> <li>■ Small broadleaved woods are a feature of the urban and urban fringe areas, providing valuable habitats and opportunities for public access.</li> <li>■ Ancient woodlands have wider historic value and are likely to incorporate upstanding evidence of historic management, principally in the form of banks and ditches.</li> <li>■ The Forest of Mercia and Black Country Urban Forest initiatives have provided a legacy of young plantations between five and twenty years old that have considerable potential if managed properly.</li> </ul>
<p>Extensive areas of lowland heathland with associated acid grassland and woodland that provide a mosaic of habitats; that are found particularly in the arc between Cannock Chase and Sutton Park.</p>	<ul style="list-style-type: none"> <li>■ 2,368 ha of lowland heathland, some 3 per cent of the national resource of a priority habitat; of a type that represents a transition between lowland and upland heath.</li> <li>■ The flora reflects the transitional nature, including the largest UK population of hybrid bilberry which is found on Cannock Chase.</li> <li>■ The habitat is important for many of the native species of amphibians and reptiles, various birds notably the nightjar, and insects.</li> <li>■ The major areas of heathland are found at Cannock Chase, around Chasewater and at Sutton Park, and there are smaller areas around the fringes of the Chase and on the northern edge of the conurbation.</li> <li>■ The SAC designation of much of Cannock Chase is due to the heathland.</li> </ul>

Landscape attribute	Justification for selection
<p>Extensive industrial archaeology, including significant sections of canal network, that reflects the area's industrial history and its central place in the industrial revolution.</p>	<ul style="list-style-type: none"> <li>■ Complex range of industrial archaeology features in the Black Country which reflects the association of the different towns with different trades and gave rise to distinctive buildings such as lock works in Willenhall and leather works in Walsall.</li> <li>■ The legacy of mining and quarrying such as the limestone caverns in Dudley; and evidence for of coal mining and the remnants of small mining settlements south of the Chase.</li> <li>■ There is an extensive canal network that was constructed in the late 18th and early 19th centuries; and the Trent and Mersey and Staffordshire and Worcestershire canals were vital links between the four major rivers of England.</li> </ul>
<p>Historic parks that often incorporate former deer parks, designed landscapes and urban parks from the 19th and 20th centuries.</p>	<ul style="list-style-type: none"> <li>■ A number of historic parks incorporate former deer parks, including Beaudesert, Teddesley, Wolseley, and notably, Sutton Park, which is a Registered Park and Scheduled Ancient Monument.</li> <li>■ Parks include archaeological features such as boundary earthworks.</li> <li>■ Shugborough Park is a designed landscape with House and a range of smaller buildings and monuments, from the 18th and 19th centuries.</li> <li>■ There are urban parks throughout the Black Country, such as Walsall Arboretum; and in towns such as Lichfield with its Cathedral Close and associated park.</li> <li>■ As well as being of historic value these parks are popular for recreation and contain valuable habitats such as the heathland and woodland at Sutton Park.</li> </ul>
<p>An extensive rights of way network and areas of access land.</p>	<ul style="list-style-type: none"> <li>■ Nearly 800 km of public rights of way including parts of several long-distance routes – Staffordshire Way, Heart of England Way, Beacon Way.</li> <li>■ The canal network provides additional routes and there are a number of dedicated cycle routes. There are good links between the urban areas and major recreational sites such as; Sandwell Valley, Barr Beacon, Sutton Park and Chasewater plus the wider countryside outside of these sites.</li> <li>■ Over 2,000 ha of open access land, much of which is on Cannock Chase, where there is also unrestricted access to the majority of the woodlands, which are currently in public ownership.</li> </ul>

## Landscape opportunities

- Protect and manage the Cannock Chase Area of Outstanding Natural Beauty so as to retain the sense of wildness and tranquillity and balance the needs of habitat management for biodiversity and protection of the Cannock Chase SAC, conservation of the historic environment, commercial forestry and public access and recreation.
- Plan for significant new green infrastructure provision within in association with areas of new urban development to expand the existing ecological networks.
- Plan for the significant expansion and sustainable management of lowland heathland and associated habitats through management, restoration and creation (particularly in the area between Cannock Chase and Sutton Park – as identified in the Staffordshire and the Birmingham and Black Country Local Biodiversity Action Plans), to maintain priority habitats and species, protect designated sites, improve habitat connectivity, and maintain the open landscape character.
- Protect and manage the distinctive geodiversity and industrial archaeology of the NCA, including geological exposures (particularly in the Black Country), buildings and sites associated with the iron, manufacturing and mining industries, and the canal network, so as to conserve the geological record and the industrial legacy.
- Protect and manage historic parks and urban parks so as to maintain significant historic landscapes and to conserve important archaeological features and habitats such as veteran trees, wood pasture and urban trees and the associated invertebrate populations.
- Protect and manage the existing network of farmland, woods, open space and water bodies within the Black Country and adjoining urban fringe to protect the underlying landscape character, maintain the mosaic of valuable habitats and associated priority species, and provide accessible local green space.
- Protect the landscape setting of historic towns, villages and farmsteads, manage heritage assets which contribute to the landscape character of the area and plan new development, and the change of use of historic buildings, that respects local character and distinctiveness.
- Manage the distinctive field boundary patterns across the NCA to maintain the historic record of regular enclosure to the west, irregular small- to medium-sized fields between the Chase and Lichfield, and 19th century enclosure around the mining settlements; manage and re-plant hedgerows in traditional style to restore landscape character and improve biodiversity value.
- Manage the small woods throughout the NCA to maintain and enhance biodiversity value and plan continued new broadleaved planting in appropriate locations particularly where opportunities exist to expand or link existing woodland areas.
- Manage the existing access network of rights of ways, cycle routes, towpaths and plan new links, particularly within urban areas and between the urban areas and the wider countryside.

## Ecosystem service analysis

The following section shows the analysis used to determine key ecosystem service opportunities within the area. These opportunities have been combined with the analysis of landscape opportunities to create Statements of Environmental Opportunity.

Please note that the following analysis is based upon available data and current understanding of ecosystem services. It does not represent a comprehensive local assessment. Quality and quantity of data for each service is variable locally and many of the services listed are not yet fully researched or understood. Therefore the analysis and opportunities may change upon publication of further evidence and better understanding of the inter-relationship between services at a local level.

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Food provision</b>	Soils – sandy soils which are predominantly Grade 3 agricultural supporting arable farming	<p>Approximately 23,500 ha (32 per cent of the NCA area) is farmed, comprising just over 400 holdings. Overall agricultural Grade 3 soils dominate. Farming is mixed, with dairying and livestock prevalent in some parts and arable important in the areas south and east of Lichfield and on the western fringes, on the lighter sandstone derived-soils.</p> <p>There are approximately 10,500 ha of grassland and 7,000 ha of cereals at the 2009 agricultural census. Sheep are the most numerous animals (approximately 15,000) followed by cattle (approximately 12,500) and pigs (approximately 6,000). Horse grazing utilises an increasing proportion of the grassland in some areas.</p>	Regional	Food provision is an important service within the area. Expansion of food provision (if possible) within the NCA (through further intensification/cultivation) would lead to increased production but could, potentially, lead to decreased water availability (due to increased irrigation) biodiversity and pollination services (through loss of uncultivated habitat) if it is not done in a sustainable way. It may also possibly reduce the ability of the ecosystem to reduce water quality and regulate soil erosion and alter sense of place if vegetated area is further reduced. Crucially reduction in these other services may threaten future yields and potentially limit cropping options for the future (if pollination services greatly declined). Due to these interdependencies provision of food needs to be balanced to ensure sustainability.	There is an opportunity to improve long term viability of agriculture/ yields by ensuring agriculture is managed sustainably and does not compromise other services or assets, for example, water supply, soil quality.	<p><b>Food provision</b></p> <p><b>Biodiversity</b></p> <p><b>Water availability</b></p> <p><b>Regulating water quality</b></p> <p><b>Sense of place/ inspiration</b></p> <p><b>Pollination</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Regulating soil quality</b></p>



Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Timber provision</b>	<p>Cannock Chase Forest estate approx 2,000 ha. managed for timber alongside other interests (recreation and biodiversity)</p> <p>Soils – poor grade</p>	<p>There are significant commercial coniferous plantations on Cannock Chase. 2,095 ha of Forestry Commission plantations are projected to produce an average annual timber volume of 18,400 cubic metres over the next ten years.</p>	Regional	<p>Current timber provision in this NCA is regionally significant. Increase in timber could increase climate change regulation through carbon sequestration and local heating effects, but only if planted on non-woodland sites. It may also (if strategically placed) provide some flood regulation and could provide increased opportunities for recreation if located within the correct place and does not affect the potential for heathland expansion.</p>	<p>There is an opportunity to review the extent of timber production to ensure maximum benefits for other services particularly in relation to relieving public pressure on Cannock Chase SAC from increasing pressure from visitors for example associated with new developments.</p> <p>There is also an opportunity to manage existing broadleaved woods throughout the NCA to provide timber.</p>	<p><b>Timber provision</b></p> <p><b>Climate regulation</b></p> <p><b>Water availability</b></p> <p><b>Regulating water</b></p> <p><b>Recreation</b></p> <p><b>Biodiversity</b></p> <p><b>Sense of place/ inspiration</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Biomass energy</b>	The existing woodland cover (8,823 ha, 12 per cent of the NCA area)	The existing woodland cover offers moderate potential for the provision of biomass, potentially as a by-product of commercial timber production associated with the extensive conifer plantations in Cannock Chase. There is a high potential yield for miscanthus in the southern half of the NCA, coinciding with the urban, built up areas of the NCA; and a low potential yield in the northern half of the NCA. For short rotation coppice (SRC) there is a low potential yield in the south and west of the NCA, increasing to medium yield in the north and east of the NCA. For information on the potential landscape impacts of biomass plantings within the NCA, refer to the tables on the Natural England website.  <a href="http://www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/default.aspx">http://www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/default.aspx</a>	Local	Biomass production in the area is currently low, however the area has medium potential for SRC. Increase provision of SRC for fuel has the potential to increase climate regulation, but could decrease provision of future food if placed on farmed areas or on biodiversity if placed on areas of non-agricultural production. Major expansion could also affect sense of place if SRC becomes a major component of the landscape.	There is an opportunity to increase production of biomass as a bi-product of existing commercial timber production and through introducing management in currently unmanaged woodlands. There is also an opportunity for small-scale biomass production through planting on sites including, for example, small parcels of land isolated by development and closed landfill sites.  There is also an opportunity to plant new broadleaf woodland or short-rotation coppice where extension or introduction of woodland character would be desirable, avoiding other priority habitats and historical features.	<p><b>Biomass energy</b></p> <p><b>Biodiversity</b></p> <p><b>Climate regulation</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Water availability</b>	<p>Aquifer (limited contribution)</p> <p>Rivers</p> <p>Canals</p> <p>Chasewater Reservoir</p>	<p>There are few major rivers in this NCA, although it does form part of the catchment for the Trent. The southern half of the NCA is crossed by an extensive network of canals comprising most of the Birmingham Canal Navigations (BCN) network. The 108-hectare Chasewater Reservoir lies in the middle of this NCA (within Lichfield District), with a capacity of 4.5 million cubic metres of water and supplying essential water to maintain levels in the BCN<sup>33</sup>. The River Stour runs for a short length through the southern corner of the NCA, and is over-abstracted along its length although the river receives effluent discharges from sewage treatment works. At times of low flow up to two thirds of the flow can be treated sewage effluent. This helps maintain flows in the River Stour at an artificially high level<sup>34</sup>. The River Sow runs for a short length through the northern corner of the NCA, and has 'no water available' for further abstraction<sup>35</sup>.</p> <p><b>Continued on next page...</b></p>	Regional	<p>Abstracted water is used for agricultural irrigation, as a water supply to the canal network and to maintain river flows within adjoining NCAs. This abstraction results in low groundwater levels and low base-flows in the relatively few rivers on the surface of the landscape. It has also been recognised as a potential issue affecting the Cannock Chase SAC. For this reason increasing water availability (through greater capture/infiltration) and further management of abstraction is likely to increase wetland biodiversity and improve water quality. Retaining water within landholdings through water storage could increase the water availability and improve agricultural outputs at times when water for irrigation is limited (for example droughts).</p>	<p>There is an opportunity to manage water within the NCA to slow runoff to increase infiltration to the sandstone aquifer. There is also an opportunity to manage over-abstraction from the aquifer and rivers through careful and efficient use of water and through use of alternative more sustainable sources of water supply where possible.</p>	<p><b>Water availability</b></p> <p><b>Biodiversity</b></p> <p><b>Regulating water quality</b></p> <p><b>Food provision</b></p> <p><b>Regulating water flow</b></p>

<sup>33</sup> Chasewater Dam blog, Lichfield District Council (accessed October 2010; URL: [www2.lichfielddc.gov.uk/chasewaterdam/](http://www2.lichfielddc.gov.uk/chasewaterdam/))

<sup>34</sup> *The Worcestershire Middle Severn Catchment Abstraction Management Strategy*, Environment Agency (December 2006)

<sup>35</sup> *The Staffordshire Trent Valley Catchment Abstraction Management Strategy*, Environment Agency (July 2007)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability		<p><b>... continued from previous page.</b></p> <p>Most of the NCA (mainly the north and east) overlays a major sandstone aquifer, where at present (2012) there is 'moderate risk' to groundwater from groundwater abstraction with the majority of this groundwater resource, as in the case of the rivers, at risk of over-abstraction<sup>16</sup>. In the north of the NCA (between Cannock, Rugeley and Stafford), surface water sources have 'no water available', and groundwater sources are 'over licensed'<sup>17</sup>, while in the middle of the NCA, approximately between Cannock and Tamworth, surface and groundwater sources are over-abtracted<sup>18</sup>. The main abstraction uses are for public water supply and industry.</p>				

<sup>16</sup> *The Tame, Anker and Mease Catchment Abstraction Management Strategy*, Environment Agency (March 2008)

<sup>17</sup> *The Staffordshire Trent Valley Catchment Abstraction Management Strategy*, Environment Agency (July 2007)

<sup>18</sup> *The Tame, Anker and Mease Catchment Abstraction Management Strategy*, Environment Agency (March 2008)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Climate regulation</b>	Heathland, Woodland  Soils	<p>Significant lowland heathland (2,368 ha) in the north west of the NCA providing a carbon store<sup>39</sup>. These soils are likely to include the freely draining very acid sandy and loamy soils (8 per cent) that have organic and peaty topsoils but may also extend over areas of freely draining slightly acid sandy soils. In addition, there are small areas of loamy and sandy soils with naturally high groundwater and a peaty surface (4 per cent) potentially associated with the Fen Pools SAC (Dudley) and other flood plain areas that typically have organic or peaty topsoils comprising thin remnants of former peat coverings which have oxidised away as a result of drainage and cultivation; although some pockets of deeper peats remain.</p> <p>These are also very important carbon stores and should be conserved. Organic-rich soils may also be found underlying smaller areas of semi-natural grassland and flood plain grazing marsh. Also important for carbon sequestration and storage will be the significant areas of woodland (covering the 12 per cent of the NCA) with carbon stored both in the underlying carbon-rich soils and in the standing timber.</p> <p><b>Continued on next page...</b></p>	Regional	Carbon storage in the areas of extensive heathland and woodland is currently relatively high, but may be increased by the expansion of heathland and native woodland planting. This is likely to lead to a reduction in provisioning of food if planted on agricultural land. There is potential for additional heathland creation within the areas of forestry and outside where there are appropriate soils, for example, ex mineral extraction sites. This would have a positive impact on the carbon sequestration and storage capacity of the NCA by increasing extent of semi-natural habitat, increased organic matter inputs and reducing the frequency / area of cultivation. If heathland and woodland are created there is good potential to increase biodiversity services and reducing impacts of recreation on Cannock Chase SAC (if access is provided). Heathland and woodland creation may also increase the sense of place by enhancing the character of Cannock Chase and Cank Wood NCA.	There is an opportunity to increase the carbon storage potential of the area through the net expansion of new heathland on appropriate soils and planting of new woodland. There is also potential to reduce fertiliser inputs and support appropriate anaerobic digestion of farm waste to reduce greenhouse gases.	<p><b>Climate regulation</b></p> <p><b>Biodiversity</b></p> <p><b>Sense of place/ inspiration</b></p> <p><b>Water availability</b></p> <p><b>Regulating water flow</b></p> <p><b>Pollination</b></p>

<sup>39</sup> NSRI National Soils Map for England and Wales, Environment Agency (January 2009)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation		<p><b>...continued from previous page.</b></p> <p>Elsewhere in the NCA, the dominant mineral soils generally have a low carbon content of between 0-5 per cent, this will be further exacerbated by the long history of mining in the area which is likely to have resulted in the loss of topsoils.</p>				

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating soil erosion</b>	Soils Semi-natural vegetation cover Hedgerows/windbreaks Woodland/copses/scrub	<p>The slowly permeable seasonally wet soils covering some 40 per cent of the NCA area are not prone to soil erosion. This is also generally the case for the loamy soils with naturally high groundwater (2 per cent) except where coarser textured variants occur on sloping ground.</p> <p>For the remaining soils of the NCA, however, soil erosion is a risk where they are not under hard surfacing. The freely draining slightly acid sandy soils and the freely draining slightly acid loamy soils (together covering 27 per cent) are at risk of erosion, especially on moderately or steeply sloping land where cultivated or bare soil is exposed, exacerbated where organic matter levels are low or soils are compacted. There is also widespread potential for wind erosion where soils are exposed, especially in spring. Similarly, there is a high probability of wind erosion where peaty soils (4 per cent) dry out. The freely draining very acid sandy and loamy soils can also erode easily where vegetation is removed, especially on steeper slopes where there may be rapid runoff during storm events.</p> <p><b>Continued on next page...</b></p>	Local	Low regulation of soil erosion is an important issue in this NCA. Increasing regulation of soil erosion would require an expansion of the existing service by taking small areas of land out of production in high risk areas to reduce compaction trap sediment and improve soil health. This approach would lower food production very slightly in the short term but could offer benefits to biodiversity by reducing sedimentation in rivers and may also help store limited amounts of carbon and could help maintain fertility in the longer term.	<p>There is potential to increase the organic matter content of the freely draining slightly acid sandy soils (agricultural soils) within this NCA through management interventions. These will improve soil structure, help increase water infiltration (aiding aquifer recharge) and reduce the risk of soil erosion.</p> <p>There is also a potential to reinstate and strengthen hedgerows and create grass buffer strips across steeper slopes under arable cultivation Also potential to strengthen the hedgerow network and increase the population of hedgerow trees across the flood plain of the River Trent in the north of the NCA to filter out soils in time of flood.</p>	<p><b>Regulating soil erosion</b></p> <p><b>Regulating soil quality</b></p> <p><b>Water availability</b></p> <p><b>Biodiversity</b></p> <p><b>Food provision</b></p> <p><b>Regulating water quality</b></p> <p><b>Regulating water flow</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion		<p><b>... continued from previous page.</b></p> <p>By comparison, the slightly acid loamy and clayey soils with impeded drainage (13 per cent) are easily compacted and prone to capping/slaking, leading to increased risk of soil erosion by surface water run-off, especially on steeper slopes. The restored soils associated with the history of opencast and coal mining are also often compacted and subject to erosion from rainfall that cannot infiltrate.</p>				



Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating soil quality</b>	Soils Heathland/ Semi-natural vegetation cover Hedgerows/ windbreaks Forestry/ Woodland/ copses/scrub	<p>There are 9 main soilscape types in this NCA:</p> <ul style="list-style-type: none"> <li>■ Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils, covering 30 per cent of the NCA.</li> <li>■ Freely draining slightly acid sandy soils (17 per cent); Slightly acid loamy and clayey soils with impeded drainage (13 per cent).</li> <li>■ Freely draining slightly acid loamy soils (10 per cent).</li> <li>■ Slowly permeable seasonally wet acid loamy and clayey soils (10 per cent).</li> <li>■ Freely draining very acid sandy and loamy soils (8 per cent).</li> <li>■ Loamy and sandy soils with naturally high groundwater and a peaty surface (4 per cent).</li> <li>■ Restored soils mostly from quarry and opencast spoil (4 per cent).</li> <li>■ Loamy soils with naturally high groundwater (2 per cent).</li> </ul> <p>Those covering 10 per cent or more of the NCA are described below.</p> <p>The slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (30 per cent) and the slowly permeable seasonally wet acid loamy and clayey soils (10 per cent) may suffer compaction and/ or capping as they are easily damaged when wet. In turn this may lead to increasingly poor water infiltration and diffuse pollution as a result of surface water run-off. Management measures that increase</p> <p><b>Continued on next page...</b></p>	Regional	It is important to minimise compaction and/ or capping risk on clayey soils, which can arise from over-grazing, trafficking or other mechanised activities. These will tend to exacerbate run-off problems as well as damaging soil structure. These soils may have limited potential for increasing organic matter levels by management interventions.	There is a potential to employ minimal tillage and incorporate organic matter to increase level of soil organic matter and relieve soil compaction.	<p><b>Regulating soil quality</b></p> <p><b>Food provision</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Regulating water quality</b></p> <p><b>Biodiversity</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality		<p>... continued from previous page.</p> <p>organic matter levels can help reduce these problems. Similarly, the slightly acid loamy and clayey soils with impeded drainage (13 per cent) are easily poached by livestock and compacted when wet, with weak topsoil structures easily damaged. Careful timing of activities is required to reduce the likelihood of soil compaction.</p> <p>The freely draining slightly acid sandy soils (17 per cent) and the freely draining slightly acid loamy soils (10 per cent) may have potential for increasing organic matter levels by management interventions reducing erosion risk and improving soil structure. These soils may be valuable in aiding aquifer recharge requiring the maintenance of good soil structure and the matching of nutrients to needs to prevent pollution of groundwater.</p>				

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating water quality</b>	Woodland Wetlands Rivers Canals Surface waters	<p>The ecological status of artificial or modified surface water bodies such as canals, which in this NCA is generally 'moderate' or 'good', although several water bodies, in particular in the south around Birmingham, fail standards for specific pollutant concentrations.</p> <p>The chemical status of surface water bodies is generally classed as 'good', though there is one length of river/canal in the south east of the NCA classed as 'failing to achieve good' status. Groundwater chemical status is 'poor' across the majority of the NCA, but 'good' in the south west corner of the NCA and in a band in the north, in the vicinity of Cannock<sup>20</sup>.</p> <p>There are no Defra Priority Catchments in this NCA.</p>	Regional	Groundwater chemical status is 'poor' across the majority of the NCA, so improvements are required to the water quality through selective reduction in inputs from point source pollution and diffuse pollution from, for example, agricultural activities, through better land management and the buffering water courses should help address specific pollutant issues in water bodies in the south around the conurbation that fail standards.	<p>There is potential to increase the organic matter content of the freely draining slightly acid sandy soils (agricultural soils) within this NCA through management interventions. These will improve soil structure, help increase water infiltration (aiding aquifer recharge) and reduce the risk of soil erosion.</p> <p>There is also a potential to reinstate and strengthen hedgerows and create grass buffer strips across steeper slopes under arable cultivation Also potential to strengthen the hedgerow network and increase the population of hedgerow trees across the flood plain of the River Trent in the north of the NCA to filter out soils in time of flood.</p>	<p><b>Regulating water quality</b></p> <p><b>Water availability</b></p> <p><b>Biodiversity</b></p> <p><b>Regulating soil erosion</b></p>

<sup>20</sup> River Basin Management Plan: Humber River Basin District, Annex : Current state of waters, Environment Agency (December 2009)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating water flow</b>	Rivers	At Stafford there is a low risk of flooding from the River Sow; a recent flood defence scheme here has raised the river walls along the Sow. In Rugeley the main source of flood risk is from River Trent, and flood risk here is assessed as low with only approximately five properties at risk. A flood relief channel has been built for the town of Cannock, taking flood flows from Ridings Brook, protecting the A5 motorway and approximately 100 properties <sup>21</sup> . Around the Wolverhampton/Birmingham conurbation, the main flood risk comes from insufficient channel capacity on the River Tame and its tributaries due to the constraint of built development as they pass through the urban areas.	Local	Flooding within the Wolverhampton/Birmingham conurbation can be reduced through river restoration and creation of new wetlands to retain water in situ and up- stream within the drainage basin.	<p>There is an opportunity to reduce run-off from rural areas in this NCA by maximising infiltration into the underlying sandstone geology and high permeability soils, through, for example, changes in farming practices and retaining water in-situ through creating wetlands and storage reservoirs.</p> <p>Opportunities for reducing flooding by the use of SUDS within developments and by land use changes, for example increasing areas of wetlands or more sustainable river maintenance and restoration, creation of and extend semi-natural flood plain habitats could also be considered to attenuate flood flow downstream.</p>	<p><b>Regulating water flow</b></p> <p><b>Biodiversity</b></p> <p><b>Water availability</b></p> <p><b>Climate regulation</b></p>

<sup>21</sup> River Trent Catchment Flood Management Plan, Environment Agency (December 2010)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Pollination</b>	<p>Areas of semi-natural habitat</p> <p>Hedgerows</p> <p>Grass margins</p>	<p>Heathland, grassland and meadows (totalling almost 4,000 ha or 5 per cent of the NCA area) plus other semi-natural vegetation all support a variety of pollinators which are essential to maintaining the habitats and to agricultural production. It is possible that the population of pollinators has fallen, with some species becoming isolated in pockets, due to the increase of commercial scale farming, the changing climate or use of chemicals, but the causes are unclear.</p>	Regional	<p>Increasing populations of pollinators is likely to require a reduction of intensity of food production in some areas (leading to a likely reduction in food provision). However, the consequences of such activity are likely to lead to a significant increase in biodiversity (which would benefit from the provision of these nectar-rich areas).</p>	<p>There is an opportunity to increase the area under semi-natural habitats, especially lowland heathland, unimproved grassland, flood plain grazing marsh and woodland with a diverse ground flora, and plant and manage flowering hedgerows and nectar and forage mix areas (particularly in arable areas), to increase the diversity of flowering plants and increase the sustainability of local agricultural production.</p>	<p><b>Pollination</b></p> <p><b>Biodiversity</b></p> <p><b>Sense of place / inspiration</b></p> <p><b>Climate regulation</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Sense of place/ inspiration</b>	Landscape Biodiversity Geodiversity Historic environment	<p>A sense of place is provided by the diverse, heavily urbanised landscape that rises above the surrounding lowlands (within other NCAs to the west and east). In the north between Stafford, Rugeley, Lichfield and Cannock, is the former hunting forest of Cannock Chase, an unenclosed, heavily wooded landscape with a varied, often steeply-sloping surface with many valleys, locally known as slades. The Chase is dominated by heathland and conifer plantations with long distance panoramic views, usually to wooded horizons, but with occasional glimpses down to lower ground, emphasising its elevation. Elsewhere the great deer parks of the area give a sense of place such as Shugborough and at Sutton Park, and locally the views of Lichfield cathedral provide a reminder of the city's historic importance.</p> <p>This contrasts with the landscape to the south of the South Staffordshire Coalfield with its linear mining settlements extending along the straight roads and field boundaries of 19th century enclosures, reclaimed and naturally colonised tips, subsidence flashes, past open cast sites, naturally colonised and wet clay pits, such as Doulton's Pit in Dudley and high density post-war development, with each settlement surrounded by a mosaic of actively farmed land, rushy pastures and unenclosed areas, often the product of past</p> <p><b>Continued on next page...</b></p>	Regional	Management to enforce sense of place is likely to increase sense of history. Conserving and enhancing the distinctive landscape features is also likely to benefit biodiversity by enhancing or expanding available habitat.	<p>There is an opportunity to maintain a sense of place, valued by local people and visitors by conserving the variety of landscape features which give the NCA its distinctive sense of place. Most prominently there are opportunities it to conserve and promote the Cannock Chase AONB, without further increasing recreational pressure on the SAC. There is an opportunity to maintain the historic features that provide local distinctiveness within the different parts of the NCA. There are opportunities to protect and maintain areas of open countryside and the network of open spaces and routes within the Black Country and adjoining urban fringe within the Forest of Mercia which would have positive benefits for recreational opportunities.</p> <p>The long distance views from Cannock Chase, Barr Beacon, the Rowley Hills and other significant viewpoints should be protected as should the views of Lichfield cathedral from surrounding areas.</p>	<p><b>Sense of place/ inspiration</b></p> <p><b>Recreation</b></p> <p><b>Sense of history</b></p> <p><b>Biodiversity</b></p> <p><b>Geodiversity</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place/ inspiration		<p><b>... continued from previous page.</b></p> <p>mining. Within the conurbation there are a number of 'beacons' in the Black Country that offer long-distance views over the conurbation and beyond. The more rural parts of the NCA to the east, around Chorley, are characterised by stock rearing with a small to medium, irregular field pattern, intact hedgerows and mature oaks with small woodlands, narrow sunken lanes and clustered red-brick and whitewashed farmsteads giving a very rural character to this landscape.</p> <p>Across the whole NCA building stones of red and yellowish sandstones, brick from the Etruria Marls of the Carboniferous and in places Silurian limestones characterise the area.</p> <p>The area has literary links to Dickens, who captured life in the area's industrial past; and Samuel Johnson was born and educated in Lichfield.</p> <p>'Dudley bug' fossil trilobite is included on the coat of arms of Dudley and illustrates the strong ties between geology and the area's cultural identity.</p>				

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Sense of history</b>	<p>Landscape</p> <p>Biodiversity</p> <p>Geodiversity</p> <p>Historic environment</p>	<p>Reflecting the area's strong industrial past, lying within the South Staffordshire Coalfield, there are limited prehistoric archaeological features, apart from bronze-age barrows on Cannock Chase and Castle Ring, an iron-age hill fort. Nevertheless, there is a wealth of industrial archaeology reflecting the area's mining past and a strongly contrasting and complex settlement pattern ranging from uniform terraced, sprawling coal mining settlements of red brick and Welsh slate roofs to scattered villages and whitewashed farmsteads predominately in the south and east and earlier timber framed buildings in locations such as Brocton. Field patterns range from the large unenclosed areas of Cannock Chase, enclosed strip fields, piecemeal enclosures to the strong rectilinear pattern of parliamentary enclosures largely aimed at ensuring the control of mineral rights over common land.</p> <p>Aspects of the historic environment that are most likely to be evident to the general public are the canal network, the clearly distinct settlements of Dudley and the cathedral city of Lichfield and the many industrial buildings associated with the industrial revolution which have survived regeneration or are being recreated within museums. Also evident are many country houses, built upon the wealth of the industrial revolution, with notable houses and parkland at Beaudesert, Teddesley, Wolseley and notably Shugborough Hall all ringing Cannock Chase, as well as Sutton Park on the edge of Birmingham.</p>	Regional	Increasing sense of history has potential to increase sense of place. This could in turn lead to increase biodiversity and recreational opportunities by reinforcing the historic character of the landscape.	There is an opportunity to increase sense of history by protecting the character and historic resource across the NCA including historic townscapes, rural buildings, the parkland estates, extensive areas of heathlands and the matrix of hedgerows that contribute to the landscape character. There is also an opportunity to conserve and interpret the important geodiversity within the NCA.	<p><b>Sense of history</b></p> <p><b>Recreation</b></p> <p><b>Biodiversity</b></p> <p><b>Geodiversity</b></p> <p><b>Sense of place/ inspiration</b></p>



Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Tranquillity</b>	<p>AONB</p> <p>Heathlands and other semi-natural habitats</p> <p>Forestry/ woodlands</p> <p>Geodiversity</p> <p>Urban green spaces</p>	<p>The NCA has experienced a decline in tranquillity from the 1960s, with only 3 per cent of the area now classified as undisturbed (CPRE Intrusion Map, 2007). Nevertheless, work undertaken by the Cannock Chase AONB has demonstrated that much of the Chase is associated in people's minds with tranquillity, offering an antidote to the largely urban surroundings of the area, further accentuated by wooded reclaimed coal tips and areas of historic wooded deer parks, and small scale intimate pastoral landscapes to the east.</p>	Local/regional	<p>Increasing tranquillity through expanding areas of heathland and deciduous woodland could also increase biodiversity/natural beauty, sense of place and management of mine relics could improve sense of history.</p>	<p>There is an opportunity to protect tranquillity in some core areas where intrusion are presently low such as within Cannock Chase AONB. This will increased opportunity for people to feel connected to nature and contribute to wellbeing and health. There is an opportunity to reduce where possible the impact of settlement in the urban fringe areas and along roads by planting woodland shelter belts, strengthening the hedgerow pattern and ensuring new development on settlement fringes is sensitively designed. There is also an opportunity to manage areas of countryside or parkland within or near urban areas, such as Sutton Park, Barr Beacon and Sandwell Valley, in a manner that retains a feeling of countryside and tranquillity, and offers access to nature.</p>	<p><b>Tranquillity</b></p> <p><b>Recreation</b></p> <p><b>Biodiversity</b></p> <p><b>Sense of place/ inspiration</b></p> <p><b>Sense of history</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Recreation</b>	Cannock Chase AONB	<p>The NCA offers a network of rights of way totalling 797 km at a density of just over 1 km per km<sup>2</sup> as well as a significant area of open access land covering 2,193 ha or just over 3 per cent of the NCA largely comprising Cannock Chase, a major focus for recreation, as one the main areas of semi-natural landscape within the West Midlands. In addition, there are a wealth of recreational opportunities including reclaimed land and naturally colonised once derelict land (the nature conservation value of which was captured in the book <i>The Endless Village</i> by Bunny Teagle; amenity areas, public open spaces and open land including Sutton Park on the edge of Birmingham, formal public parks, open space along river corridors as well opportunities offered by the Forest of Mercia Community Forest covering parts of the West Midlands and South Staffordshire.</p> <p>The areas historic environment, industrial archaeology and geology also offer many recreational and educational opportunities.</p>	National	<p>It is likely that recreational opportunity could be increased in some areas of the NCA without significant effects on other services. However, increased recreation within the Cannock Chase SAC should be avoided due to the potential impacts on biodiversity. Increased recreation across the NCA may also have a minor negative effect on tranquillity, and potentially a small effect on food production (for example, through taking land out of production to produce paths in some areas).</p>	<p>Opportunity to maintain and enhance the access throughout the area on public rights of way, on the long-distance routes (Staffordshire Way, Heart of England Way and Beacon way), on canal towpaths and cycle routes, and to areas of open access land and recreational sites; and as proposed in the Staffordshire, Dudley, Sandwell, Walsall and Wolverhampton Rights of Way Improvement Plans.</p> <p>There is an opportunity to promote the recreational and education opportunities offered by the public access to the large houses and estates in the area, the Cannock Chase Country Park, Sutton Park NNR and other large areas of open space such as Chasewater.</p> <p>An opportunity to expand the recreational corridors and links through the provision of green infrastructure particular emphasis being on links from the urban areas out to the urban fringe of the Forest of Mercia.</p>	<p><b>Recreation</b></p> <p><b>Sense of place/ inspiration</b></p> <p><b>Sense of history</b></p>
	Cannock Chase Country Park & forest estate					
	Sutton Park NNR					
	Local Nature Reserves/ Green spaces					
	Canals					
	Foot paths					
	Open Access Land					
	Forest of Mercia					
	Historic parklands					
	Archaeological features					
Local geological features						

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Biodiversity</b>	<p>Semi-natural/ priority habitats (species-rich grasslands, heathlands wetlands, deciduous woodlands)</p> <p>Local Nature Reserves/green spaces</p> <p>Canals</p> <p>Urban sites awaiting redevelopment</p>	<p>A total of 7 per cent of the NCA area is a priority habitat, including an internationally designated area of lowland heathland (Cannock Chase- 2,368 ha), which is the most extensive such habitat in the Midlands<sup>22</sup>. Other priority habitats include undetermined grassland, wet woodland, and flood plain grazing marsh.</p> <p>There are three internationally designated habitats in the NCA, all SAC: Cannock Chase (the lowland heathland described above), Fens Pools, and the Cannock Extension Canal. There are 23 SSSI in the NCA, totalling 4 per cent of the NCA area.</p>	International/ National	Improvement in the condition of designated sites is likely to have a positive impact on other services. The improvement in the condition, and expansion, of heathland and other priority habitats will also assist in climate regulation through the storage of carbon. Increases in habitat extent could also have a positive effect on water quantity, water quality, soil erosion but is likely to have a negative impact on the forestry and agriculture.	<p>There is an opportunity to increase areas of heathland, unimproved grassland and flood plain grazing marsh, creating extensive and connected areas of semi-natural habitat which are managed in favourable condition, to increase the resilience of these habitats to climate change.</p> <p>There is an opportunity to Improve management of heathland and associated habitats, through introduction of further grazing of heathland sites.</p> <p>There is an opportunity to integrate woodland management for biodiversity with timber and biomass production.</p> <p>There is also an opportunity to protect, manage and extend the varied habitats and open areas within the Black Country and adjoining urban fringe to retain and increase biodiversity value and improve network connections, including the identification and management of 'open mosaic habitats'.</p>	<p><b>Biodiversity</b></p> <p><b>Recreation</b></p> <p><b>Sense of place/ inspiration</b></p> <p><b>Regulating water quality</b></p> <p><b>Water availability</b></p> <p><b>Regulating water flow</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Climate regulation</b></p>

<sup>22</sup> SAC selection data, Joint Nature Conservation Committee (URL: <http://jncc.defra.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030107>)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Geodiversity</b>	<p>Geology</p> <p>Exposed rock formations</p> <p>Designated geodiversity sites</p>	<p>There are currently 8 nationally designated geological sites within the NCA and 6 local sites. These consist mainly of man-made exposures in particular disused quarries. (Recreational services and contributions to sense of place made by geology are picked up above).</p>	Regional	<p>Designated sites provide important, and accessible sections allowing the interpretation, understanding and continued research into the geodiversity of the NCA.</p>	<p>Opportunity to further promote the geodiversity of the NCA particularly for recreational and educational resources adding to the sense of place and sense of history. There is an opportunity to manage the geological sites to enhance biodiversity.</p>	<p><b>Geodiversity</b></p> <p><b>Biodiversity</b></p> <p><b>Sense of place/ inspiration</b></p> <p><b>Sense of history</b></p>

## Photo credits

Front cover: One of the many tracks that cross Cannock Chase © Natural England/A. Ratcliffe

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Page 5: © John Godley/Cannock Chase AONB

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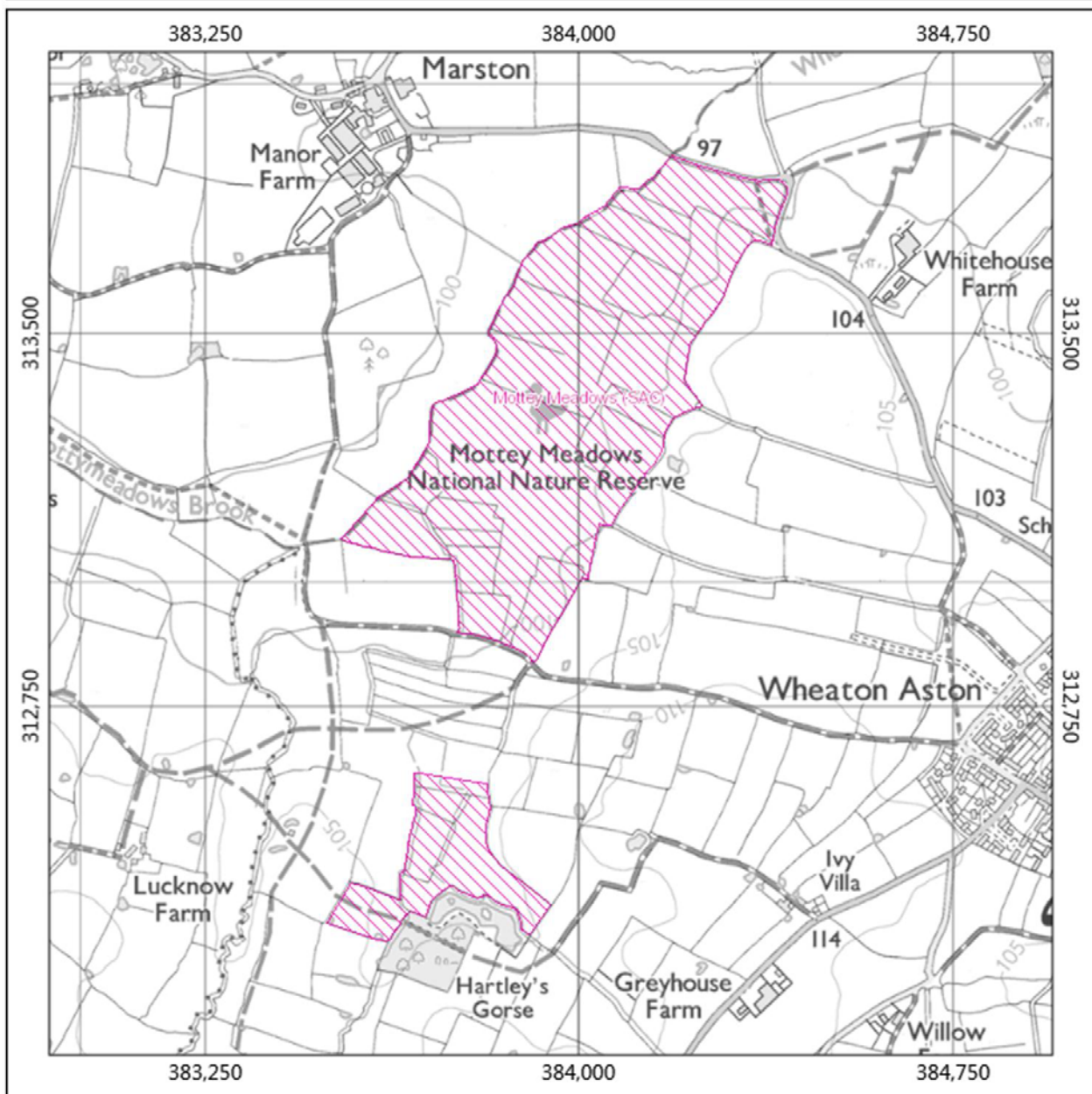
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
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## Motey Meadows SAC



### Key

-  Special Areas of Conservation England © Natural England
-  Ordnance Survey (Greyscale) © Ordnance Survey



Map Produced from WebMap2 on 24/10/18

Map Projection: British National Grid

Map Scale at A4: 1:11,595

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# Mottey Meadows

## Site details



Location of Motte Meadows SAC/SCI/cSAC

<b>Country</b>	England
<b>Unitary Authority</b>	Shropshire and Staffordshire
<b>Centroid*</b>	SJ840134
<b>Latitude</b>	52.7175
<b>Longitude</b>	-2.236944444
<b>SAC EU code</b>	UK0030051
<b>Status</b>	Designated Special Area of Conservation (SAC)
<b>Area (ha)</b>	43.69

\* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

## General site character

Humid grassland, Mesophile grassland (97%)

Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas) (3%)

[Natura 2000 standard data form](#) for this site as submitted to Europe (PDF, < 100kb).

[Interactive map](#) from MAGIC (Multi-Agency Geographic Information for the Countryside).

**Note:**

When undertaking an appropriate assessment of impacts at a site, **all** features of European importance (both primary and non-primary) need to be considered.

## **Annex I habitats that are a primary reason for selection of this site**

### **6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)**

Mottey Meadows represents **lowland hay meadows** in the English Midlands, and holds a relatively large area of the habitat (approximately 40 ha). The site contains grassland with limited influence of agricultural intensification and so demonstrates good conservation of structure and function. There are transitions to other dry and wet grassland types. The site is important for a range of rare meadow species, including fritillary *Fritillaria meleagris* at its most northerly native locality.

## **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site**

Not applicable.

## **Annex II species that are a primary reason for selection of this site**

Not applicable.

## **Annex II species present as a qualifying feature, but not a primary reason for site selection**

Not applicable.

*Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.*





# NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),  
Proposed Sites for Community Importance (pSCI),  
Sites of Community Importance (SCI) and  
for Special Areas of Conservation (SAC)

SITE UK0030051  
SITENAME Motte Meadows

## TABLE OF CONTENTS

- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES](#)
- [6. SITE MANAGEMENT](#)

## 1. SITE IDENTIFICATION

<b>1.1 Type</b> B	<b>1.2 Site code</b> UK0030051	<a href="#">Back to top</a>
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### 1.3 Site name

Motte Meadows

<b>1.4 First Compilation date</b> 1998-06	<b>1.5 Update date</b> 2015-12
--	-----------------------------------

### 1.6 Respondent:

**Name/Organisation:** Joint Nature Conservation Committee  
**Address:** Joint Nature Conservation Committee Monkstone House City Road Peterborough  
PE1 1JY  
**Email:**

**Date site proposed as SCI:** 1998-06  
**Date site confirmed as SCI:** 2004-12  
**Date site designated as SAC:** 2005-04

**National legal reference of SAC designation:**

Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010  
(<http://www.legislation.gov.uk/uksi/2010/490/contents/made>).

## 2. SITE LOCATION

[Back to top](#)

## 2.1 Site-centre location [decimal degrees]:

**Longitude**  
-2.236944444

**Latitude**  
52.7175

## 2.2 Area [ha]:

43.69

## 2.3 Marine area [%]

0.0

## 2.4 Sitelength [km]:

0.0

## 2.5 Administrative region code and name

**NUTS level 2 code**

**Region Name**

UKG2

Shropshire and Staffordshire

## 2.6 Biogeographical Region(s)

Atlantic (100.0  
%)

# 3. ECOLOGICAL INFORMATION

## 3.1 Habitat types present on the site and assessment for them

[Back to top](#)

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
6510			32.76		G	A	B	A	A

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

# 4. SITE DESCRIPTION

## 4.1 General site character

[Back to top](#)

Habitat class	% Cover
N10	97.0

N21	3.0
Total Habitat Cover	100

### Other Site Characteristics

1 Terrestrial: Soil & Geology: neutral,alluvium 2 Terrestrial: Geomorphology and landscape: floodplain,lowland

### 4.2 Quality and importance

Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) for which this is considered to be one of the best areas in the United Kingdom.

### 4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	J02		B
H	H02		B
H	A02		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
H	A04		I
H	D05		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

### 4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): <http://publications.naturalengland.org.uk/category/3212324>  
[http://jncc.defra.gov.uk/pdf/Natura2000\\_StandardDataForm\\_UKApproach\\_Dec2015.pdf](http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf)  
<http://publications.naturalengland.org.uk/category/6490068894089216>

## 5. SITE PROTECTION STATUS (optional)

### 5.1 Designation types at national and regional level:

[Back to top](#)

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0	UK01	88.6		

## 6. SITE MANAGEMENT

### 6.1 Body(ies) responsible for the site management:

[Back to top](#)

Organisation:	Natural England
Address:	
Email:	

## 6.2 Management Plan(s):

An actual management plan does exist:

<input checked="" type="checkbox"/>	Yes	Name: Mottey Meadows: The Mottey Meadows National Nature Reserve (NNR) Management Plan provides management information related to this site. This is available from Natural England. Link: _____
<input type="checkbox"/>	No, but in preparation	
<input type="checkbox"/>	No	

## 6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

## EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the [official European Union guidelines for the Standard Data Form](#). The relevant page is shown in the table below.

### 1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

### 3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

### 3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippophila rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

### 3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

### 3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

### 3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

### 3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

### 3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

### 3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

### 3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

### 3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

#### 4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

#### 4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65



CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc.), trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

### 5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

**Name:** Mottey Meadows  
**Unitary Authority/County:** Staffordshire  
**SAC status:** Designated on 1 April 2005  
**Grid reference:** SJ840134  
**SAC EU code:** UK0030051  
**Area (ha):** 43.87  
**Component SSSI:** Mottey Meadows SSSI

### Site description:

Mottey Meadows contains lowland hay meadows with limited influence of agricultural intensification and so demonstrates good conservation of structure and function. There are transitions to other dry and wet grassland types. The site is important for a range of rare meadow species, including fritillary *Fritillaria meleagris* at its most northerly native locality.

**Qualifying habitats:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

This citation relates to a site entered in the Register of European Sites for Great Britain.

Register reference number: UK0030051

Date of registration: 14 June 2005

Signed: [REDACTED]

On behalf of the Secretary of State for Environment,  
Food and Rural Affairs

# European Site Conservation Objectives for Motte Meadows Special Area of Conservation

## Site Code: UK0030051



With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;**

- **The extent and distribution of qualifying natural habitats**
- **The structure and function (including typical species) of qualifying natural habitats, and**
- **The supporting processes on which qualifying natural habitats rely**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

### **Qualifying Features:**

H6510. Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

## Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the “Habitats Regulations”). They must be considered when a competent authority is required to make a ‘Habitats Regulations Assessment’, including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a [Special Area of Conservation \(SAC\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term ‘favourable conservation status’ is defined in regulation 3 of the Habitats Regulations.

**Publication date:** 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.



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

**Mottey Meadows Special Area of Conservation (SAC)  
Site code: UK0030051**



Natural England, 2008

**Date of Publication: 16 October 2018**

## **About this document**

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Motte Meadows 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](mailto:HDIRConservationObjectivesNE@naturalengland.org.uk)**

## About this site

### European Site information

<b>Name of European Site</b>	Mottey Meadows Special Area of Conservation (SAC)
<b>Location</b>	Staffordshire
<b>Site Maps</b>	The designated boundary of this site can be viewed <a href="#">here</a> on the MAGIC website
<b>Designation Date</b>	1 April 2005
<b>Qualifying Features</b>	See section below
<b>Designation Area</b>	43.69 ha
<b>Designation Changes</b>	
<b>Feature Condition Status</b>	Details of the feature condition assessments made at this site can be found using Natural England's <a href="#">Designated Sites System</a>
<b>Names of component Sites of Special Scientific Interest (SSSIs)</b>	Mottey Meadows SSSI.
<b>Relationship with other European or International Site designations</b>	NA

### Site background and geography

Mottey Meadows consists of a series of agriculturally-unimproved and seasonally-inundated meadows near the village of Wheaton Aston in Staffordshire. These 'flood meadows' lie within the [Shropshire, Cheshire and Staffordshire Plain National Character Area](#) (NCA) , an expanse of flat or gently undulating, lush, pastoral farmland that comprises most of the county of Cheshire, the northern half of Shropshire and a large part of north-west Staffordshire. The meadows have been managed for hay making for many centuries.

Mottey Meadows represents lowland hay meadows in the English Midlands, and holds a relatively large area of the habitat (approximately 40 ha). The site contains damp species-rich grassland with limited influence of agricultural intensification and so demonstrates good conservation of structure and function. There are valuable transitions to other dry and wet grassland types. The site is important for a range of rare meadow species, including the fritillary *Fritillaria meleagris* at its most northerly native locality.

The SAC is also managed as a [National Nature Reserve](#).

## 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:

- **H6510 Lowland Hay Meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)**

This Annex I type comprises species-rich hay meadows on moderately fertile soils of river and tributary floodplains. Most examples are cut annually for hay, with light aftermath grazing by livestock. Seasonal flooding maintains an input of nutrients.

In the UK, this habitat corresponds to NVC type MG4 *Alopecurus pratensis* – *Sanguisorba officinalis* grassland. This community is characterised by species-rich swards containing frequent red fescue *Festuca rubra*, crested dog's-tail *Cynosurus cristatus*, meadow foxtail *Alopecurus pratensis*, great burnet *Sanguisorba officinalis*, meadowsweet *Filipendula ulmaria* and meadow buttercup *Ranunculus acris*. It provides the main habitat in the UK for fritillary *Fritillaria meleagris*.

This grassland type is rare in the UK and is now confined almost entirely to central and southern England, with a few outlying fragments along the Welsh borders. It is estimated to cover less than 1,500 hectares in total, and survives at scattered and mostly small sites.

This SAC has one of the largest surviving areas of H6510 Lowland Hay Meadow in the UK and shows a high degree of conservation of structure and function associated with stable patterns of traditional low-intensity management. The SAC series encompasses the range of ecological variation shown by the habitat type, particularly those variations supporting important populations of rare and scarce meadow species, and also covers the geographical distribution of the habitat type in the UK.

### Qualifying Species:

N/A



**Table 1: Supplementary Advice for Qualifying Features: H6510. Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)**

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Extent and distribution of the feature</b>	<b>Extent of the feature within the site</b>	Maintain the total extent of the H6510 feature to 34.4ha.	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored..</p> <p>The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>For this feature, there will be year to year fluctuations in climate resulting in variable flooding regimes. This may mean that there will need to be make some allowance for reversible shifts in vegetation types between MG4 (H6510) and wetter vegetation types such as inundation grasslands (e.g. MG13, MG7c) and MG8 and related vegetation depending on the flood cycle</p>	<p>NATURE CONSERVANCY COUNCIL, 1981. Vegetation survey of Mottey Meadow.</p> <p>NATURAL ENGLAND, 2014. Long-term Monitoring Network survey.</p> <p>FLOODPLAIN MEADOWS PARTNERSHIP, 2011. Vegetation survey of Mottey Meadow.</p> <p>ENGLISH NATURE, 2005. Vegetation map – Mottey Meadows.</p>
	<b>Spatial distribution of the feature within the site</b>	Maintain the distribution and configuration of the H6510 feature, including where applicable its component vegetation types, across the site	<p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes.</p> <p>This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction. These fragments also have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Structure and function (including its typical species)</b>	<b>Vegetation community composition</b>	<p>Ensure the component vegetation communities of the H6510 feature are broadly referable to and characterised by the following National Vegetation Classification type:</p> <p>MG4 <i>Alopecurus pratensis</i> - <i>Sanguisorba officinalis</i> grassland.</p>	<p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management.</p> <p>In the UK these have been categorised by the National Vegetation Classification (NVC). Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>Some small areas of the MG4 at Mottey has affinities to (and might be considered intermediate with) MG8 <i>Cynosurus cristatus-Caltha palustris</i> grassland; M24 <i>Molinia caerulea-Cirsium dissectum</i> fen meadow; M22 <i>Juncus subnodulosus-Cirsium palustre</i> fen meadow; and MG5 <i>Cynosurus cristatus-Centaurea nigra</i> grassland. For the purposes of this document, they should be considered variants of MG4 and part of the SAC feature.</p> <p>A map showing the distribution of the small areas of grassland that have affinities to (and might be considered intermediate with) MG8 <i>Cynosurus cristatus-Caltha palustris</i> grassland; M24 <i>Molinia caerulea-Cirsium dissectum</i> fen meadow; M22 <i>Juncus subnodulosus-Cirsium palustre</i> fen meadow; and MG5 <i>Cynosurus cristatus-Centaurea nigra</i> grassland is available from Natural England on request. The map is reproduced at the end of the document.</p>	
	<b>Undesirable species</b>	<p>Maintain or restore the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread:</p> <p><i>Anthriscus sylvestris</i>, <i>Cirsium arvense</i>, <i>Cirsium vulgare</i>,</p>	<p>Undesirable non-woody and woody vascular plants species may require active management to avert an unwanted succession to a different and less desirable state. Often they may be indicative of a negative trend relating to another aspect of a site's structure and function.</p> <p>These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/acceptable components or even dominants.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p><i>Epilobium hirsutum</i>,  <i>Galium aparine</i>,  <i>Plantago major</i>,  <i>Rumex crispus</i>,  <i>Rumex obtusifolius</i>,  <i>Senecio jacobaea</i>,  <i>Urtica dioica</i>,  <i>Equisetum arvense</i>)  <i>Lolium perenne</i>,  <i>Phleum pratense</i>,  <i>Bromus hordeaceus</i>,  <i>Holcus lanatus</i>,  <i>Trifolium repens</i>)</p> <p><i>Arrhenatherum</i> and  <i>Dactylis glomerata</i></p> <p>Large <i>Carex</i> species;  large grasses such  as <i>Glyceria maxima</i>,  <i>Phalaris arundinacea</i>  and <i>Phragmites</i>  <i>australis</i>; and coarse  <i>Juncus</i> species,  particularly <i>J.</i>  <i>effusus</i>, <i>J.</i>  <i>conglomeratus</i>)</p> <p>Woody species and  bracken</p>		
<b>Structure and function (including its typical species)</b>	<b>Vegetation community transitions</b>	Restore the natural pattern of vegetation zonations and transitions.	<p>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.</p> <p>Retaining such transitions can provide further diversity to the habitat feature, and support additional flora and fauna.</p> <p>Spring-lines are thought to arise along the gentle slope to higher ground along the eastern</p>	<p>WATER MANAGEMENT CONSULTANTS LTD FOR EA, 1998. Hydrological Assessment of Motte Meadows.</p> <p>AMEC, 2013. Mottey</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>edge of the SAC/SSSI producing areas of MG4 vegetation that have affinities to M22 and M24.</p> <p>Restoration is necessary because the hydrology has been impacted by drainage (on and off-site) and eutrophication (sourced from the catchment).</p>	Meadows NNR: Wetland eco-hydrological characterisation, nutrient budget and water management plan.
<b>Structure and function (including its typical species)</b>	<b>Soils, substrate and nutrient cycling</b>	<p>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 H6510 habitat.</p> <p>For this feature soil P index should typically be between index 0-1 (&lt; 9 mg l<sup>-1</sup>)</p>	<p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter.</p> <p>Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.</p>	
	<b>Water quality</b>	<p>Restore water quality and quantity to a standard which provides the necessary conditions to support the H6510 feature.</p>	<p>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. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p> <p>Surface water from the catchment is enriched by diffuse pollution sourced mainly from agriculture. At the moment most, but not all, of it is directed through the site by a system of ditches and drains to try and minimise its impact on the SAC/SSSI's vegetation. Restoration of a cleaner surface water supply is required to safeguard the site and before a more natural or more typical hydrological regime can be restored.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>Spring-lines are thought to arise along the gentle slope to higher ground along the eastern edge of the SAC/SSSI. The degree to which these are also impacted by eutrophication is not known.</p> <p>More work is needed to better understand the eco-hydrology of the site; the interactions of surface and groundwater; the trophic status and distribution of the SAC/SSSI water supplies; and what opportunities there might be for restoration of more natural processes.</p>	
<b>Structure and function (including its typical species)</b>	<b>Hydrology: Water table</b>	Restore a hydrological regime which provides a consistently near-surface water table which typically averages depths of 35 cm (winter), 45cm (spring), 70cm (summer) and 60cm (autumn) below ground level	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature.. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts.</p> <p>For this feature sub-surface water table levels during the year should be at levels consistent with published guidance.</p> <p>There are at least two relevant reports into the hydrology of the SAC. More work is needed, to better understand the eco-hydrology of the site; the interactions of surface and groundwater; the trophic status and distribution of the SAC/SSSI water supplies; and what opportunities there might be for restoration of more natural processes.</p>	<p>WATER MANAGEMENT CONSULTANTS LTD FOR EA, 1998. Hydrological Assessment of Motte Meadows.</p> <p>AMEC, 2013. Motte Meadows NNR: Wetland eco-hydrological characterisation, nutrient budget and water management plan.</p>
	<b>Hydrology: Flooding regime</b>	Restore a hydrological regime which provides a cumulative duration of annual surface flooding which is typically less than 10 days between December-February and less than 3 days between September-November, with no inundations during March – August, subject to natural changes	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts.</p> <p>For this feature, the timing, frequency, extent and duration of surface flooding should be commensurate with maintenance of the feature at this site. A non-optimal flooding regime can result in a shift from H6510 to other vegetation types (such as inundation grassland, swamps). Too little flooding may compromise the necessary conservation/agricultural management due to reduced nutrient inputs which will reduce hay yields making hay management less viable and sustainable.</p> <p>At the moment, surface water from the catchment is enriched by diffuse pollution sourced mainly from agriculture. At the moment most, but not all, of it is directed through the site</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>by a system of ditches and drains to try and minimise its impact on the SAC/SSSI's vegetation. Flooding (winter and summer) is discouraged.</p> <p>Restoration of a cleaner surface water supply is required to safeguard the site and before a more natural or more typical hydrological regime can be restored.</p> <p>The 1981 NCC survey identifies 10ha of semi-improved or improved grassland within the SAC/SSSI.</p>	
<b>Structure and function (including its typical species)</b>	<b>Hydrology</b>	At a site, unit and/or catchment level (as necessary), restore natural hydrological processes to provide the conditions necessary to sustain the H6510 feature within the site	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature..</p> <p>Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts.</p> <p>For this feature surface flooding regime and sub-surface irrigation via gravel aquifers can be affected by land use change, water abstraction, flood alleviation, development and mineral extraction in the catchment.</p> <p>At the moment surface water from the catchment is enriched by diffuse pollution sourced mainly from agriculture. Restoration of a cleaner surface water supply is required before a more natural or more typical hydrological regime can be restored.</p> <p>Spring-lines are thought to arise along the gentle slope to higher ground along the eastern edge of the SAC/SSSI. The degree to which these are also impacted by eutrophication is not known.</p> <p>More work is needed, to better understand the eco-hydrology of the site; the interactions of surface and groundwater; the trophic status and distribution of the SAC/SSSI water supplies; and what opportunities there might be for restoration of more natural processes.</p>	
	<b>Functional connectivity with wider landscape</b>	Restore the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection	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. 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	

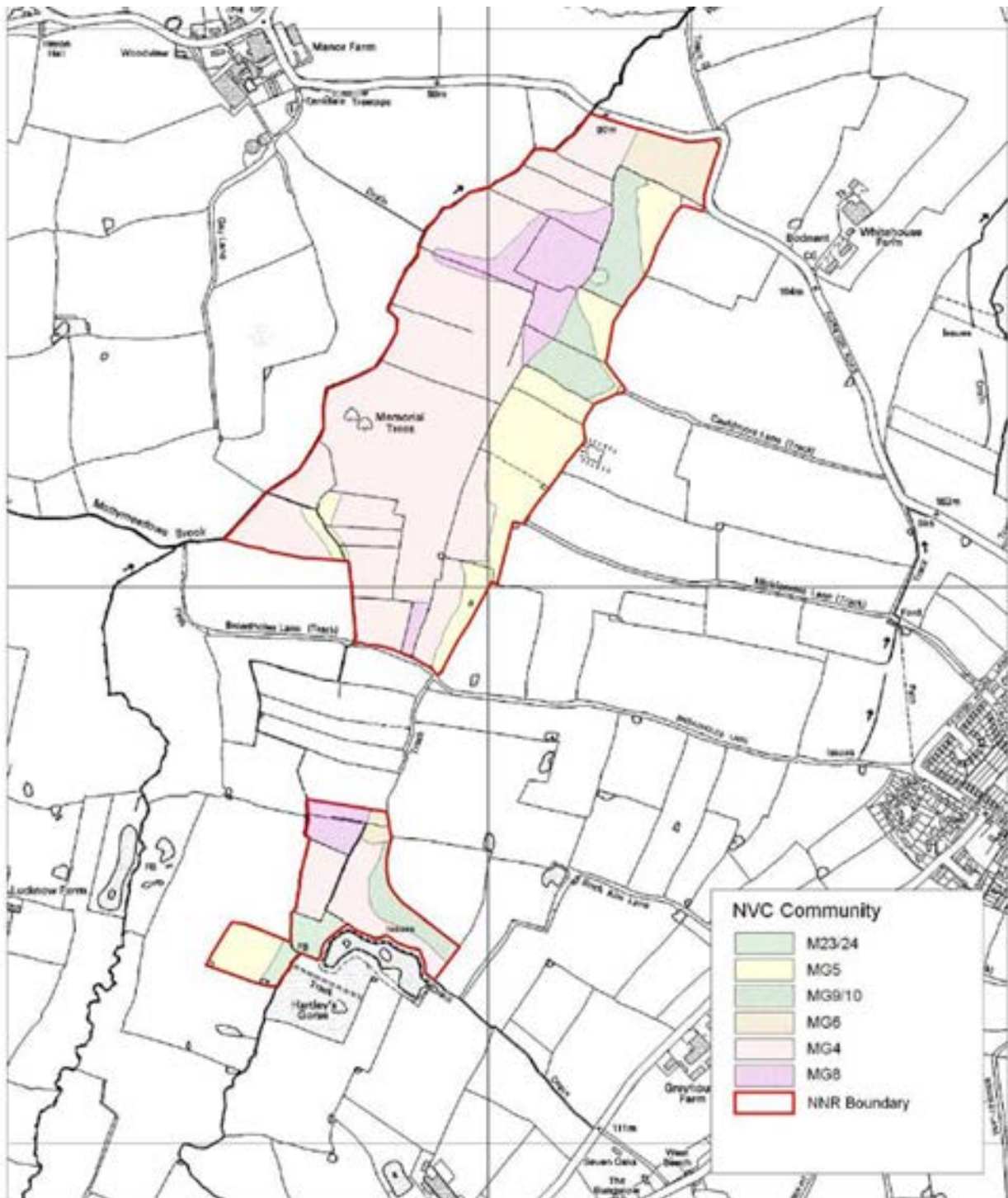
Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		with the H6510 feature of the site	<p>connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p> <p>Apart from a network of linear habitat features (such as hedges and canals), Mottey Meadows SAC/SSSI is relatively isolated and somewhat marooned within a landscape of intensive dairy and arable farmland. Otherwise the nearest fen, mire and wet grassland habitat is the tiny one hectare of M24 at Allimore Green SSSI, three miles to the north. Five miles to the north bigger areas of mire and fen can be found at Aqualate and Doley Common SSSI. This fragmentation might account for the disappearance of breeding snipe from lowland Staffordshire (including from Mottey Meadows SSSI).</p>	
<b>Structure and function (including its typical species)</b>	<b>Adaptation and resilience</b>	Restore the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site	<p>This recognises the increasing likelihood of natural habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. 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.</p> <p>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 SAC to climate change has been assessed by Natural England (2015) as being high, taking into account the sensitivity, fragmentation, topography and management of its habitats. 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, such as reducing habitat fragmentation, creating more habitat to buffer the site or expand the habitat into more varied landscapes and addressing particular management and condition issues. Individual species may be more or less vulnerable than their habitat itself. In many cases, change will be inevitable so appropriate monitoring would be advisable.</p>	NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at <a href="http://publications.naturalengland.org.uk/publication/4954594591375360">http://publications.naturalengland.org.uk/publication/4954594591375360</a> ].
<b>Supporting processes (on which the feature relies)</b>	<b>Air quality</b>	Restore as necessary the concentrations and deposition of air pollutants to within the site-relevant Critical Load or Level	<p>This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it.</p> <p>Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of</p>	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		values given for this feature of the site on the Air Pollution Information System ( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ).	<p>scientific understanding. There are critical levels for ammonia (NH<sub>3</sub>), oxides of nitrogen (NO<sub>x</sub>) and sulphur dioxide (SO<sub>2</sub>), 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.</p> <p>It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p> <p>According to the APIS website, the SAC is currently exceeded the Critical Load/Level thresholds for ammonia and nitrogen. The website measures Mottey against the neutral grassland threshold. It should be noted that MG4 is wet grassland with affinities and eco-hydrological characteristics of fen and mire. At Mottey this is evident in the occurrence of vegetation that has affinities to M22 and M24. Rich fen is given a threshold of 15-30kg N/ha/yr, which would suggest the risk for exceedance is higher than suggested by treating the SAC as neutral grassland.</p>	Pollution Information System ( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ).
<b>Supporting processes (on which the feature relies)</b>	<b>Conservation measures</b>	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 H6510 feature	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.</p> <p>Conservation measures for this feature will typically include grazing, cutting, scrub management, weed control, recreation/visitor management. Also covered is maintenance of surface drainage features such as grips, gutters and foot drains. Retention of suitable land use infrastructure/patterns to enable site management e.g. pastoral livestock farming</p> <p>The site has been consistently managed by a regime of hay-making and aftermath grazing with cattle. Recently sheep have been used to graze the aftermath (instead of, or as well of, cattle). The effectiveness of sheep-grazing compared to cattle-grazing might need monitoring.</p>	<p>NATURAL ENGLAND, 2014. <a href="#">Site Improvement Plan: Mottey Meadows</a> (SIP143)</p> <p>ENGLISH NATURE, 2005. Views about the management of Mottey Meadows SSSI; <a href="https://designatedsites.naturalengland.org.uk/PDFsForWeb/VAM/1002612.pdf">https://designatedsites.naturalengland.org.uk/PDFsForWeb/VAM/1002612.pdf</a></p>
<b>Structure and function (including</b>	<b>Key structural, influential</b>	Maintain the abundance of the species listed to	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.	



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
its typical species)	and distinctive species	<p>enable each of them to be a viable component of the H6510 feature;</p> <p>Constant and preferential species of the MG4 vegetation type, including great burnet <i>Sanguisorba officinalis</i> and meadow foxtail <i>Alopecurus pratensis</i></p> <p>Populations of Snake's-head fritillary <i>Fritillaria mealegaris</i>, saw-wort <i>Serratula tinctoria</i> and meadow thistle <i>Cirsium dissectum</i></p>	<p>These species will include;</p> <ul style="list-style-type: none"> <li>• <i>Structural</i> species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition').</li> <li>• <i>Influential</i> 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)</li> <li>• <i>Site-distinctive</i> species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC.</li> </ul> <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary.</p> <p>The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p>	
<p><b>Version Control</b> Advice last updated: n/a</p> <p><b>Variations from national feature-framework of integrity-guidance:</b> n/a</p>				

**Mottey Meadows SAC Vegetation Map (from English Nature, 2005)**



**NVC Community**

- M23/24
- MG5
- MG9/10
- MG6
- MG4
- MG8
- NNR Boundary

**Scale 1:10000**  
 0 200 400 600m  
 0 500 1000 1500ft

Map 1 of 1  
 Drawn By: Tim Coleshaw  
 Date: 9/3/2005  
 Ref: s/8400713032  
 © English Nature 2005

Grid  
 Norths

**English Nature**  
 North Mercia Team  
 Attingham Park  
 Shrewsbury  
 Shropshire  
 SY4 4TW

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# Site Improvement Plan

## Mottey Meadows

Site Improvement Plans (SIPs) have been developed for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA). This work has been financially supported by LIFE, a financial instrument of the European Community.

The plan provides a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features. It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance.

The SIP consists of three parts: a Summary table, which sets out the priority Issues and Measures; a detailed Actions table, which sets out who needs to do what, when and how much it is estimated to cost; and a set of tables containing contextual information and links.

Once this current programme ends, it is anticipated that Natural England and others, working with landowners and managers, will all play a role in delivering the priority measures to improve the condition of the features on these sites.

The SIPs are based on Natural England's current evidence and knowledge. The SIPs are not legal documents, they are live documents that will be updated to reflect changes in our evidence/knowledge and as actions get underway. The information in the SIPs will be used to update England's contribution to the UK's Prioritised Action Framework (PAF).

The SIPs are not formal consultation documents, but if you have any comments about the SIP or would like more information please email us at [IPENSLIFEProject@naturalengland.org.uk](mailto:IPENSLIFEProject@naturalengland.org.uk), or contact Natural England's Responsible Officer for the site via our enquiry service 0300 060 3900, or [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk)

**This Site Improvement Plan covers the following Natura 2000 site(s)**

**UK0030051 Mottey Meadows SAC**

## Site description

This site is an outstanding floristically-diverse mesotrophic grassland where traditional late hay cutting and aftermath grazing has been perpetuated, largely unaffected by modern agricultural practices.

The site is important because of its large size, variety of grassland community types and presence of rare species. Furthermore it contains an extensive example of an alluvial flood meadow.

## Plan Summary

*This table shows the prioritised issues for the site(s), the features they affect, the proposed measures to address the issues and the delivery bodies whose involvement is required to deliver the measures. The list of delivery bodies will include those who have agreed to the actions as well as those where discussions over their role in delivering the actions is on-going.*

Priority & Issue	Pressure or Threat	Feature(s) affected	Measure	Delivery Bodies
1 Water Pollution	Pressure	H6510 Lowland hay meadows	Investigate and establish a low/no nutrient input buffer zone	Natural England, Staffordshire Wildlife Trust
2 Hydrological changes	Threat	H6510 Lowland hay meadows	Improve understanding of the eco-hydrology of the site's features	Environment Agency, Natural England, Landowner(s)
3 Water abstraction	Threat	H6510 Lowland hay meadows	Assess cumulative impact of licenced and exempted abstractions	Environment Agency, Natural England
4 Change in land management	Threat	H6510 Lowland hay meadows	Contingency plans put in place in the event that graziers withdraw from the site	Natural England

## Issues and Actions

This table outlines the prioritised issues that are currently impacting or threatening the condition of the features, and the outstanding actions required to address them. It also shows, where possible, the estimated cost of the action and the delivery bodies whose involvement will be required to implement the action. Lead delivery bodies will be responsible for coordinating the implementation of the action, but not necessarily funding it. Delivery partners will need to support the lead delivery body in implementing the action. In the process of developing the SIPs Natural England has approached the delivery bodies to seek agreement on the actions and their roles in delivering them, although in some cases these discussions have not yet been concluded. Other interested parties, including landowners and managers, will be involved as the detailed actions are agreed and delivered. Funding options are indicated as potential (but not necessarily agreed or secured) sources to fund the actions.

### 1 Water Pollution

The hay meadow community type is reliant on a clean water supply. However both the local groundwater and the local watercourse which floods occasionally are enriched with excess nutrients. The source of the nutrient enrichment is thought to stem from the adjacent dairy farms, maize crops, run off, and leachates. Excess nutrients enable more vigorous plant species to take over reducing the biodiversity value of the MG4 grassland.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
1A	Develop a Diffuse Water Pollution Plan for the catchment and implement actions. This should include the prevention of nutrient rich water from the Motty Meadow brook innudating the SAC meadows.	£3,000	2014-15	Diffuse Water Pollution Plan	Not yet determined	Natural England	Environment Agency

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
1B	On sloping land to the west and east, subject to further investigation, establish low/ no nutrient input managment buffer zone by promoting the uptake of suitable HLS/ NELMS schemes. Seek conversion of land from arable to low input grass.	Not yet determined	2014-20	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Not yet determined	Natural England	n/a

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>1C</b>	On sloping land to the west and east establish, subject to further investigation, low/ no nutrient input managment buffer zone by reviewing the designated site boundaries.	Not yet determined	2014-20	Designation strategy (SSSI)	Not yet determined	Natural England	n/a
<b>1D</b>	Secure long-term conservation management of suitable areas of sloping land to the west and east inorder to secure appropriate low/ no nutrient input managment buffer zones. Consider additions to the NNR as opportunities arise.	£844,991	2014-25	Land / Tenancy Acquisition: Land Acquisition	Not yet determined	Natural England	Staffordshire Wildlife Trust

## 2 Hydrological changes

MG4 and MG8 grassland have precise hydrological requirements, climate change could cause flooding and drought, both would have a detrimental impact on the features.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>2A</b>	To develop a clear conceptual model of the eco-hydrology that allows the maintenace of the hydrological status quo. The site is different from many MG4 sites as it is ground water dependent.	£25,000	2014-17	Investigation / Research / Monitoring	Not yet determined	Natural England	Environment Agency, Landowner(s)

### 3 Water abstraction

The Whiston Brook catchment appears to be affected by over abstraction; trickle irrigation has been highlighted as one of the main reasons for this with much of the catchment being used to grow soft fruit. Trickle Irrigation is currently exempt from licensing at the present time. Abstractions less than 20 cubic metres per day are exempt although. The MG8 and MG4 grassland types are sensitive to water level changes.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>3A</b>	Investigate the cumulative impact of licenced and unlicenced abstractions (particularly trickle irrigation). If deemed harmful reduce to a sustainable level.	Not yet determined	2014-20	Regulation: Abstraction Licence	Not yet determined	Environment Agency	Natural England

### 4 Change in land management

Annual hay cut and aftermath grazing are essential management requirements for the MG4 and MG8 grassland

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>4A</b>	Operate a grazing and hay cutting contingency plan to ensure land is managed annually in line with the habitat management guidelines, eg if the graziers were not available, utilise contractors to manage the grazing and hay cutting.	£2,000	2014-61	National Nature Reserve (NNR) management plan	Not yet determined	Natural England	n/a



## Site details

The tables in this section contain site-relevant contextual information and links

### Qualifying features

#UK Special responsibility

#### Mottey Meadows SAC

H6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

### Site location and links

#### Mottey Meadows SAC

Area (ha) **43.87**

Grid reference **SJ840134**

[Map link](#)

Local Authorities

Staffordshire

Site Conservation Objectives

[European Site Conservation Objectives for Mottey Meadows SAC](#)

European Marine Site conservation advice

[n/a](#)

Regulation 33/35 Package

[n/a](#)

Marine Management Organisation site plan

[n/a](#)

## Water Framework Directive (WFD)

*The Water Framework Directive (WFD) provides the main framework for managing the water environment throughout Europe. Under the WFD a management plan must be developed for each river basin district. The River Basin Management Plans (RBMP) include a summary of the measures needed for water dependent Natura 2000 sites to meet their conservation objectives. For the second round of RBMPs, SIPs are being used to capture the priorities and new measures required for water dependent habitats on Natura 2000 sites. SIP actions for non-water dependent sites/habitats do not form part of the RBMPs and associated consultation.*

### **Mottey Meadows SAC**

*River basin*

[Humber RBMP](#)

*WFD Management catchment*

Staffordshire Trent Valley

*WFD Waterbody ID (Cycle 2 draft)*

GB104028046761

## Overlapping or adjacent protected sites

Site(s) of Special Scientific Interest (SSSI)	
Mottey Meadows SAC	Mottey Meadows SSSI

National Nature Reserve (NNR)	
Mottey Meadows SAC	Mottey Meadows NNR

Ramsar	
Mottey Meadows SAC	n/a

Special Areas of Conservation (SAC) and Special Protection Areas (SPA)	
Mottey Meadows SAC	n/a

<i>Version</i>	<i>Date</i>	<i>Comment</i>
1.0	13/11/14	

[www.naturalengland.org.uk/ipens2000](http://www.naturalengland.org.uk/ipens2000)



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